PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : C07D 241/44, 401/06, 405/06, A61K 31/495 — A1

(11) International Publication Number: **WO 00/00478**

(43) International Publication Date: 6 January 2000 (06.01.00)

(21) International Application Number: PCT/US99/14395

(22) International Filing Date: 25 June 1999 (25.06.99)

(30) Priority Data:
60/090,893 26 June 1998 (26.06.98) US

(71) Applicant: DU PONT PHARMACEUTICALS COMPANY [US/US]; 974 Centre Road, WR-1ST18, Wilmington, DE 19807 (US).

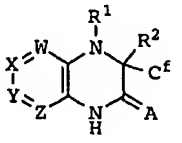
(72) Inventors: PATEL, Mona; 111 Scotts Way, Wilmington, DE 19810 (US). MCHUGH, Robert, Joseph; 12 Highland Way, Newark, DE 19702 (US).

(74) Agent: LARSEN, Scott, K.; Du Pont Pharmaceuticals Company, Legal Patent Records Center, 1007 Market Street, Wilmington, DE 19898 (US).

(81) Designated States: AU, BR, CA, CN, CZ, EE, HU, IL, IN, JP, KR, LT, LV, MX, NO, NZ, PL, RO, SG, SI, SK, UA, VN, ZA, Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: SUBSTITUTED QUINOXALIN-2(1H)-ONES USEFUL AS HIV REVERSE TRANSCRIPTASE INHIBITORS



(I)

(57) Abstract

The present invention relates to quinoxalin-2(1H)-ones of formula (I) or stereoisomeric forms or mixtures, or pharmaceutically acceptable salt forms thereof, which are useful as inhibitors of HIV reverse transcriptase, and to pharmaceutical compositions and diagnostic kits comprising the same and methods of using the same for treating viral infection or as an assay standard or reagent.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
AM	Armenia	**FI**	Finland	**LT**	Lithuania	**SK**	Slovakia
AT	Austria	**FR**	France	**LU**	Luxembourg	**SN**	Senegal
AU	Australia	**GA**	Gabon	**LV**	Latvia	**SZ**	Swaziland
AZ	Azerbaijan	**GB**	United Kingdom	**MC**	Monaco	**TD**	Chad
BA	Bosnia and Herzegovina	**GE**	Georgia	**MD**	Republic of Moldova	**TG**	Togo
BB	Barbados	**GH**	Ghana	**MG**	Madagascar	**TJ**	Tajikistan
BE	Belgium	**GN**	Guinea	**MK**	The former Yugoslav Republic of Macedonia	**TM**	Turkmenistan
BF	Burkina Faso	**GR**	Greece			**TR**	Turkey
BG	Bulgaria	**HU**	Hungary	**ML**	Mali	**TT**	Trinidad and Tobago
BJ	Benin	**IE**	Ireland	**MN**	Mongolia	**UA**	Ukraine
BR	Brazil	**IL**	Israel	**MR**	Mauritania	**UG**	Uganda
BY	Belarus	**IS**	Iceland	**MW**	Malawi	**US**	United States of America
CA	Canada	**IT**	Italy	**MX**	Mexico	**UZ**	Uzbekistan
CF	Central African Republic	**JP**	Japan	**NE**	Niger	**VN**	Viet Nam
CG	Congo	**KE**	Kenya	**NL**	Netherlands	**YU**	Yugoslavia
CH	Switzerland	**KG**	Kyrgyzstan	**NO**	Norway	**ZW**	Zimbabwe
CI	Côte d'Ivoire	**KP**	Democratic People's Republic of Korea	**NZ**	New Zealand		
CM	Cameroon			**PL**	Poland		
CN	China	**KR**	Republic of Korea	**PT**	Portugal		
CU	Cuba	**KZ**	Kazakstan	**RO**	Romania		
CZ	Czech Republic	**LC**	Saint Lucia	**RU**	Russian Federation		
DE	Germany	**LI**	Liechtenstein	**SD**	Sudan		
DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

TITLE

SUBSTITUTED QUINOXALIN-2(1H)-ONES USEFUL AS HIV REVERSE TRANSCRIPTASE INHIBITORS

FIELD OF THE INVENTION

This invention relates generally to substituted quinoxalin-2(1H)-ones which are useful as inhibitors of HIV reverse transcriptase, pharmaceutical compositions and diagnostic kits comprising the same, and methods of using the same for treating viral infection or as assay standards or reagents.

BACKGROUND OF THE INVENTION

Two distinct retroviruses, human immunodeficiency virus (HIV) type-1 (HIV-1) or type-2 (HIV-2), have been etiologically linked to the immunosuppressive disease, acquired immunodeficiency syndrome (AIDS). HIV seropositive individuals are initially asymptomatic but typically develop AIDS related complex (ARC) followed by AIDS. Affected individuals exhibit severe immunosuppression which predisposes them to debilitating and ultimately fatal opportunistic infections.

The disease AIDS is the end result of an HIV-1 or HIV-2 virus following its own complex life cycle. The virion life cycle begins with the virion attaching itself to the host human T-4 lymphocyte immune cell through the bonding of a glycoprotein on the surface of the virion's protective coat with the CD4 glycoprotein on the lymphocyte cell. Once attached, the virion sheds its glycoprotein coat, penetrates into the membrane of the host cell, and uncoats its RNA. The virion enzyme, reverse transcriptase, directs the process of transcribing the RNA into single-stranded DNA. The viral RNA is degraded and a second DNA strand is created. The now double-stranded DNA is integrated into the human cell's genes and those genes are used for virus reproduction.

At this point, RNA polymerase transcribes the integrated DNA into viral RNA. The viral RNA is translated into the precursor *gag-pol* fusion polyprotein. The polyprotein is

then cleaved by the HIV protease enzyme to yield the mature viral proteins. Thus, HIV protease is responsible for regulating a cascade of cleavage events that lead to the virus particle's maturing into a virus that is capable of full infectivity.

The typical human immune system response, killing the invading virion, is taxed because the virus infects and kills the immune system's T cells. In addition, viral reverse transcriptase, the enzyme used in making a new virion particle, is not very specific, and causes transcription mistakes that result in continually changed glycoproteins on the surface of the viral protective coat. This lack of specificity decreases the immune system's effectiveness because antibodies specifically produced against one glycoprotein may be useless against another, hence reducing the number of antibodies available to fight the virus. The virus continues to reproduce while the immune response system continues to weaken. Eventually, the HIV largely holds free reign over the body's immune system, allowing opportunistic infections to set in and without the administration of antiviral agents, immunomodulators, or both, death may result.

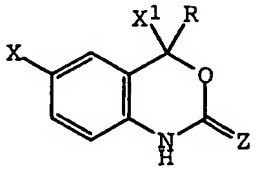
There are at least three critical points in the virus's life cycle which have been identified as possible targets for antiviral drugs: (1) the initial attachment of the virion to the T-4 lymphocyte or macrophage site, (2) the transcription of viral RNA to viral DNA (reverse transcriptase, RT), and (3) the processing of gag-pol protein by HIV protease.

Inhibition of the virus at the second critical point, the viral RNA to viral DNA transcription process, has provided a number of the current therapies used in treating AIDS. This transcription must occur for the virion to reproduce because the virion's genes are encoded in RNA and the host cell reads only DNA. By introducing drugs that block the reverse transcriptase from completing the formation of viral DNA, HIV-1 replication can be stopped.

A number of compounds that interfere with viral replication have been developed to treat AIDS. For example,

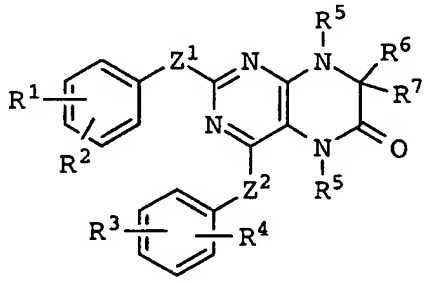
nucleoside analogs, such as 3'-azido-3'-deoxythymidine (AZT), 2',3'-dideoxycytidine (ddC), 2',3'-dideoxythymidinene (d4T), 2',3'-dideoxyinosine (ddI), and 2',3'-dideoxy-3'-thia-cytidine (3TC) have been shown to be relatively effective in halting HIV replication at the reverse transcriptase (RT) stage.

Non-nucleoside HIV reverse transcriptase inhibitors have also been discovered. As an example, it has been found that certain benzoxazinones are useful in the inhibition of HIV reverse transcriptase, the prevention or treatment of infection by HIV and the treatment of AIDS. U. S. Patent Number 5,519,021, the contents of which are hereby incorporated herein by reference, describes reverse transcriptase inhibitors which are benzoxazinones of the formula:



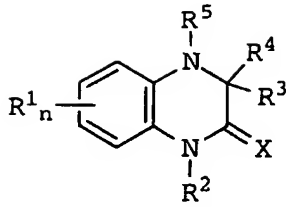
wherein X is a halogen, Z may be O. However, benzoxazinones are not part of the present invention.

U.S. Patent No. 5,693,641 depicts bicyclic pyrimidine derivatives useful as anticoagulants of the formula:



wherein Z^1 and Z^2, independently, can be -O-, -NR^5-, or -OCH_2-; R^5 is H, alkyl, aryl, or aralkyl; R^6 and R^7 can be a variety of groups. Compounds of this sort are not within the scope of the presently claimed invention.

EP 0,657,166 A1 illustrates quinoxalines of the formula:



which in combination with at least one nucleoside exhibit an antiviral effect. The application describes quinoxalines generally, wherein X is O or S; R^2 or R^5 can be a variety of groups including H, alkyl, alkenyl, alkynyl, cycloalkyl, substituted carbonyl, substituted oxycarbonyl, substituted aminocarbonyl; and R^3 or R^4, can be a variety of groups including H, alkyl, alkenyl, cycloalkyl, and aryl, but not alkynyl. However, EP 0,657,166 A1 does not disclose by exemplification compounds wherein R^3 or R^4 are $-CF_3$, $-CF_2CF_3$, $-CF_2CF_2CF_3$ or cyclopropyl, compounds wherein R^3 or R^4 are alkynyls or substituted alkynyls.

Even with the current success of reverse transcriptase inhibitors, it has been found that HIV patients can become resistant to a single inhibitor. Thus, it is desirable to develop additional inhibitors to further combat HIV infection.

It has unexpectedly been found that compounds of the present invention, most preferably, 3-(perfluoroalkyl)-3,4-dihydro-1,H-quinoxalin-2-ones, are useful as HIV reverse transcriptase inhibitors.

SUMMARY OF THE INVENTION

Accordingly, one object of the present invention is to provide novel reverse transcriptase inhibitors.

It is another object of the present invention to provide a novel method for treating HIV infection which comprises administering to a host in need of such treatment a therapeutically effective amount of at least one of the compounds of the present invention or a pharmaceutically acceptable salt or prodrug form thereof.

It is another object of the present invention to provide a novel method for treating HIV infection which comprises

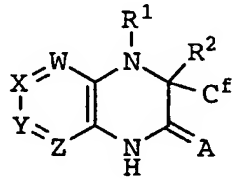
administering to a host in need thereof a therapeutically effective combination of (a) one of the compounds of the present invention and (b) one or more compounds selected form the group consisting of HIV reverse transcriptase inhibitors and HIV protease inhibitors.

It is another object of the present invention to provide pharmaceutical compositions with reverse transcriptase inhibiting activity comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of at least one of the compounds of the present invention or a pharmaceutically acceptable salt or prodrug form thereof.

It is another object of the present invention to provide a method of inhibiting HIV present in a body fluid sample which comprises treating the body fluid sample with an effective amount of a compound of the present invention.

It is another object of the present invention to provide a kit or container containing at least one of the compounds of the present invention in an amount effective for use as a standard or reagent in a test or assay for determining the ability of a potential pharmaceutical to inhibit HIV reverse transcriptase, HIV growth, or both.

These and other objects, which will become apparent during the following detailed description, have been achieved by the inventors' discovery that compounds of formula (I):

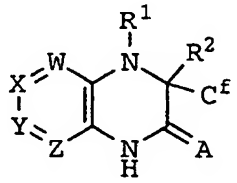


(I)

wherein A, W, X, Y, Z, R^1, R^2, and C^f are defined below, stereoisomeric forms, mixtures of stereoisomeric forms, or pharmaceutically acceptable salt forms thereof, are effective reverse transcriptase inhibitors.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Thus, in a first embodiment, the present invention provides a novel compound of Formula (I):



(I)

or a stereoisomer or pharmaceutically acceptable salt form thereof, wherein:

A is O or S;

W is N or CR^3;

X is N or CR^4;

Y is N or CR^5;

Z is N or CR^6;

C^f is cyclopropyl or C_{1-3} alkyl substituted with 3-7 halogen;

provided that the number of W, X, Y, and Z which are N, is zero, one or two;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$, $-SOR^{12}$, $-CONHR^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-6}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
$-CH=CR^7R^8$,

$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-4}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, -OH, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^4 is selected from:
H, F, Cl, Br, I, -OH, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

alternatively, R^3 and R^4, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form a 5-7 membered carbocyclic ring, said carbocyclic ring being aromatic or nonaromatic, said carbocyclic ring being substituted with 0-2 R^{10};

alternatively, R^3 and R^4, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form a 5-7 membered heterocyclic ring containing 1, 2 or 3 heteroatoms atoms selected from the group consisting of N, O, and S, said heterocyclic ring being aromatic or nonaromatic, said heterocyclic ring being substituted with 0-2 R^{10};

R^5 is selected from H, F, Cl, Br, I, -OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, and butoxy;

alternatively, R^4 and R^5, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form a 5-7 membered carbocyclic ring, said carbocyclic ring being aromatic or nonaromatic, said carbocyclic ring being substituted with 0-2 R^{10};

alternatively, R^4 and R^5, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form a 5-7 membered heterocyclic ring containing 1, 2 or 3 heteroatoms atoms selected from the group consisting of N, O, and S, said heterocyclic ring being aromatic or nonaromatic, said heterocyclic ring being substituted with 0-2 R^{10};

R^6 is selected from:

H, OH, F, Cl, Br, I, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,

C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^{7a}, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;;

R^{7b}, at each occurrence, is methyl, ethyl, propyl, or butyl;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, CH(-OCH_2CH_2O-),
C_{1-4} haloalkyl,
C_{1-6} alkyl substituted with 0-3 R^{11},
C_{2-6} alkenyl,
C_{3-7} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, NR^7R^{7a}, and $C(=O)CH_3$;

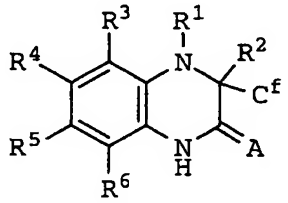
R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, NR^7R^{7a}, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-7} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10},
$-(CH_2)_p$phenyl substituted with 0-2 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl); and

p, at each occurrence, is selected from 0, 1, 2, and 3;

provided, if, simultaneously, each of W, X, Y, and Z are carbon, then R^2 is not unsubstituted C_{1-4} alkyl.

In a preferred embodiment, the present invention provides a novel compound of Formula (II), wherein:



(II)

wherein:

A is O or S;

C^f is $-CF_3$, $-CF_2CF_3$, or $-CF_2CF_2CF_3$;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$, $-SOR^{12}$, $-CONHR^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-6}$ alkyl substituted with 0-3 R^{11},

$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
$-CH=CR^7R^8$,
$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, -OH, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^4 is selected from:
H, F, Cl, Br, I, -OH, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and

5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

alternatively, R^3 and R^4, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form $-O-CH_2-O-$, $-O-CH_2-CH_2-O-$, or $-CH=CH-CH=CH-$;

R^5 is selected from H, F, Cl, Br, I, -OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, and butoxy;

alternatively, R^4 and R^5, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form $-O-CH_2-O-$, $-O-CH_2-CH_2-O-$, or $-CH=CH-CH=CH-$;

R^6 is selected from:

H, OH, F, Cl, Br, I, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,

C_{1-3} alkyl substituted with 0-3 R^{11},

C_{2-3} alkenyl,

C_{2-3} alkynyl,

C_{1-3} alkoxy,

phenyl substituted with 0-2 R^{10}, and

5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^{7a}, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;;

R^{7b}, at each occurrence, is methyl, ethyl, propyl, or butyl;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, CH(-OCH_2CH_2O-),
C_{1-4} haloalkyl,
C_{1-6} alkyl substituted with 0-3 R^{11},
C_{2-6} alkenyl,
C_{3-7} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, NR^7R^{7a}, and $C(=O)CH_3$;

R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, NR^7R^{7a}, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-7} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10},
-$(CH_2)_p$phenyl substituted with 0-2 R^{10}, and
-$(CH_2)_p$(C_{3-5} cycloalkyl); and

p, at each occurrence, is selected from 0, 1, 2, and 3.

In a further preferred embodiment, the present invention provides a novel compound of Formula (II), wherein:

A is O or S;

C^f is $-CF_3$, $-CF_2CF_3$, or $-CF_2CF_2CF_3$;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$, $-SOR^{12}$, $-CONHR^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-5}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
$-CH=CR^7R^8$,
$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, $-OH$, $-OCF_3$, $-CN$, $-NO_2$, $-CHO$, $-C(=O)CH_3$,
$-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$,
$-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-SCH_3$,
$-S(=O)CH_3$, $-SO_2CH_3$, $-SO_2NHCH_3$, $-NHSO_2CH_3$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,

R^4 is selected from:
H, F, Cl, Br, I, $-OH$, OH, $-OCF_3$, $-CN$, $-NO_2$, $-CHO$,
$-C(=O)CH_3$, $-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$,
$-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$,

-NHC(=O)OCH_3, -NHC(=O)OCH_2CH_3, -C(=O)OCH_3,
-C(=O)OCH_2CH_3, -SCH_3, -SCH_2CH_3, -S(=O)CH_3,
-S(=O)CH_2CH_3, -SO_2H, -SO_2CH_3, -$SO_2CH_2CH_3$, -SO_2NHCH_3,
-$SO_2NHCH_2CH_3$, -$NHSO_2CH_3$, -$NHSO_2CH_2CH_3$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,

alternatively, R^3 and R^4, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form -O-CH_2-O-, -O-CH_2-CH_2-O-, or -CH=CH-CH=CH-;

R^5 is selected from H, F, Cl, Br, I, -OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, and butoxy;

alternatively, R^4 and R^5, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form -O-CH_2-O-, -O-CH_2-CH_2-O-, or -CH=CH-CH=CH-;

R^6 is selected from:
H, F, Cl, Br, I, -OH, -OCF_3, -CN, -NO_2, -CHO, -C(=O)CH_3,
-C(=O)CF_3, -C(=O)NH_2, -C(=O)$NHCH_3$, -NH_2, -$NHCH_3$,
-$N(CH_3)_2$, -NHC(=O)OCH_3, -C(=O)OCH_3, -SCH_3,
-S(=O)CH_3, -SO_2CH_3, -SO_2NHCH_3, -$NHSO_2CH_3$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^{7a}, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, CH(-OCH_2CH_2O-),
C_{1-4} haloalkyl,
C_{1-6} alkyl substituted with 0-3 R^{11},
C_{2-6} alkenyl,
C_{3-7} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, NR^7R^{7a}, and $C(=O)CH_3$;

R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, NR^7R^{7a}, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-7} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10},
-$(CH_2)_p$phenyl substituted with 0-2 R^{10}, and
-$(CH_2)_p$(C_{3-5} cycloalkyl); and

p, at each occurrence, is selected from 0, 1, 2, and 3.

In a more further preferred embodiment, the present invention provides a novel compound of Formula (II), wherein:

A is O;

C^f is $-CF_3$ or $-CF_2CF_3$;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-5}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
$-CH=CR^7R^8$,
$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, -OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$,

R^4 is selected from:
H, F, Cl, Br, I, -OH, OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^5 is selected from H, F, Cl, Br, I, -OH, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^6 is selected from:

H, F, Cl, Br, I, -OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, $CH(-OCH_2CH_2O-)$,
C_{1-4} haloalkyl,
C_{1-4} alkyl substituted with 0-3 R^{11},
C_{2-4} alkenyl,
C_{3-6} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl;

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, $-NH_2$, $-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$, and $C(=O)CH_3$;

R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, $-NH_2$, $-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-6} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and

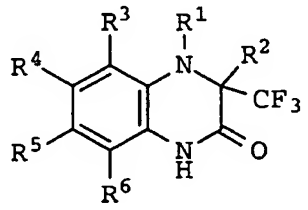
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl,

$-(CH_2)_p$phenyl substituted with 0-2 R^{10}, and

$-(CH_2)_p(C_{3-5}$ cycloalkyl); and

p, at each occurrence, is selected from 0, 1, and 2.

In an even more further preferred embodiment, the present invention provides a novel compound of Formula (III);



(III)

wherein:

R^1 is selected from:

$-CF_3$, $-CF_2H$, $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-CH_2CH_2CH_2CH_3$, $-CH(CH_3)_2$, $-CH_2CH(CH_3)_2$, $-CH_2CH_2C(CH_3)_3$, $-CH_2CH_2CH(CH_3)CH_3$,

$-CH(=CH_2)CH_3$, $-CH_2CH=CH_2$, $-CH_2-CH=C(CH_3)_2$, $-CH_2-C\equiv CH$, $-CH_2-C\equiv CCH_3$, $-CH_2Ph$, -cycPr, $-CH_2$cycPr, $-CH_2CH_2$cycPr,

$-CO_2CH_3$, $-CO_2CH_2CH_3$, $-CO_2CH_2CH_2CH_3$, $-CO_2CH_2CH_2CH_2CH_3$, $-CO_2CH(CH_3)_2$, $-CO_2CH_2CH(CH_3)_2$, $-CO_2CH_2Ph$, $-CO_2$cycPr, $-CO_2CH_2$cycPr, $-CO_2CH_2CH=CH_2$, $-SO_2CH_2CH_3$, $-SO_2CH(CH_3)_2$, $-COCH_3$, $-COCH_2CH_3$, $-COCH_2CH_2CH_3$, $-COCH(CH_3)_2$, and $-COCH_2$cycPr;

R^2 is selected from:

benzyl, phenethyl, $-CH_2CH_2$cycPr, $-C\equiv C-CH_3$, $-C\equiv C-CF_3$, $-C\equiv C-$Et, $-C\equiv C-$iPr, $-C\equiv C-$cycPr,

$-C\equiv C-1-(CH_3)cycPr$, $-C\equiv C-CH=CH_2$, $-C\equiv C-C(=CH_2)CH_3$, $-CH=CH-CH_3$, $-CH=CH-CF_3$, $-CH=CH-Et$, $-CH=CH-iPr$, $-CH=CH-cycPr$, $-CH=CH-CH=CH_2$, $-CH_2-C\equiv C-CH_3$, $-CH_2-C\equiv C-CF_3$, $-CH_2-C\equiv C-Et$, $-CH_2-C\equiv C-iPr$, $-CH_2-C\equiv C-cycPr$, $-CH_2-C\equiv C-CH=CH_2$, $-CH_2-CH=CH_2$, $-CH_2-CH=CH-CH_3$, $-CH_2-CH=CH-CF_3$, $-CH_2-CH=CH-Et$, $-CH_2-CH=CH-iPr$, $-CH_2-CH=CH-cycPr$, $-CH_2-CH=CH-CH=CH_2$, $-CH_2-CH=C(CH_3)_2$, and $-CH=CH-CH_2-cycPr$;

R^3 is selected from:

H, F, Cl, Br, I, $-OH$, $-OCF_3$, $-CN$, $-NO_2$, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$,

R^4 is selected from:

H, F, Cl, Br, I, $-OH$, OH, $-OCF_3$, $-CN$, $-NO_2$, $-C(=O)CH_3$, $-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^5 is selected from H, F, and Cl; and

R^6 is selected from:

H, F, Cl $-OH$, $-OCF_3$, $-CF_3$, $-CH_3$, and $-OCH_3$.

In a further preferred embodiment, a compound of the present invention is selected from:

4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(methyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(methyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

3-(allyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(benzyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(cyclopropylmethyl)-3-(allyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(propargyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(cyclopropylethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isopropyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(allyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(cyclopropylmethyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(isobutyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(cyclopropylmethyl)-3-(phenethyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(allyl)-3-(phenethyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(methoxy)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(methoxy)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(cyclopropylmethyl)-3-(1-propynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(allyl)-3-(1-propynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isobutoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(n-butoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(allyloxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(benzyloxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(n-propylsulfonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(phenylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(neopentyl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(2-propynyl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isopropylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(cyclopropylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(ethylsulfonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isopropylsulfonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(methoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

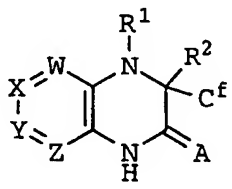
6-(fluoro)-4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one; and

6-(fluoro)-4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

In a most preferred embodiment, the present invention provides a novel compound of Formula (I), Formula (II) or Formula (III), or a stereoisomer or pharmaceutically acceptable salt form thereof, wherein R^1, C^f, A, W, X, Y, and Z are as defined above; and R^2 is $-C\equiv C-R^8$ or $-(CHR^7)_pC\equiv C-R^8$.

In another preferred embodiment, the present invention provides a compound of Formula (IIb):



(IIb)

wherein:

A is O or S;

W is N or CR^3;

X is N or CR^4;

Y is N or CR^5;

Z is N or CR^6;

C^f is $-CF_3$, $-CF_2CF_3$, or $-CF_2CF_2CF_3$;

provided that one or two of W, X, Y, and Z are N;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-5}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
$-CH=CR^7R^8$,
$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, $-OH$, $-OCF_3$, $-CN$, $-NO_2$, $-CHO$, $-C(=O)CH_3$,
$-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$,
$-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$,

R^4 is selected from:
H, F, Cl, Br, I, -OH, OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^5 is selected from H, F, Cl, Br, I, -OH, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^6 is selected from:
H, F, Cl, Br, I, -OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, $CH(-OCH_2CH_2O-)$,
C_{1-4} haloalkyl,
C_{1-4} alkyl substituted with 0-3 R^{11},
C_{2-4} alkenyl,
C_{3-6} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl;

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

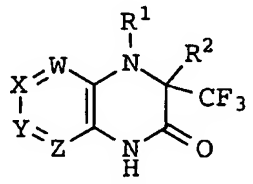
R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, $-NH_2$, $-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$, and $C(=O)CH_3$;

R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, $-NH_2$, $-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-6} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl,
$-(CH_2)_p$phenyl substituted with 0-2 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl); and

p, at each occurrence, is selected from 0, 1, and 2.

In more preferred embodiment, the present invention provides a compound of Formula (IIIa):



(IIIb)

wherein:

R^1 is selected from:
$-CF_3$, $-CF_2H$, $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-CH_2CH_2CH_2CH_3$, $-CH(CH_3)_2$, $-CH_2CH(CH_3)_2$, $-CH_2CH_2C(CH_3)_3$, $-CH_2CH_2CH(CH_3)CH_3$,

$-CH(=CH_2)CH_3$, $-CH_2CH=CH_2$, $-CH_2-CH=C(CH_3)_2$, $-CH_2-C\equiv CH$, $-CH_2-C\equiv CCH_3$, $-CH_2Ph$, -cycPr, $-CH_2$cycPr, $-CH_2CH_2$cycPr,

$-CO_2CH_3$, $-CO_2CH_2CH_3$, $-CO_2CH_2CH_2CH_3$, $-CO_2CH_2CH_2CH_2CH_3$, $-CO_2CH(CH_3)_2$, $-CO_2CH_2CH(CH_3)_2$, $-CO_2CH_2Ph$, $-CO_2cycPr$, $-CO_2CH_2cycPr$, $-CO_2CH_2CH=CH_2$, $-SO_2CH_2CH_3$, $-SO_2CH(CH_3)_2$, $-COCH_3$, $-COCH_2CH_3$, $-COCH_2CH_2CH_3$, $-COCH(CH_3)_2$, and $-COCH_2cycPr$;

R^2 is selected from:

benzyl, phenethyl, $-CH_2CH_2cycPr$, $-C\equiv C-CH_3$, $-C\equiv C-CF_3$, $-C\equiv C-Et$, $-C\equiv C-iPr$, $-C\equiv C-cycPr$, $-C\equiv C-1-(CH_3)cycPr$, $-C\equiv C-CH=CH_2$, $-C\equiv C-C(=CH_2)CH_3$, $-CH=CH-CH_3$, $-CH=CH-CF_3$, $-CH=CH-Et$, $-CH=CH-iPr$, $-CH=CH-cycPr$, $-CH=CH-CH=CH_2$, $-CH_2-C\equiv C-CH_3$, $-CH_2-C\equiv C-CF_3$, $-CH_2-C\equiv C-Et$, $-CH_2-C\equiv C-iPr$, $-CH_2-C\equiv C-cycPr$, $-CH_2-C\equiv C-CH=CH_2$, $-CH_2-CH=CH_2$, $-CH_2-CH=CH-CH_3$, $-CH_2-CH=CH-CF_3$, $-CH_2-CH=CH-Et$, $-CH_2-CH=CH-iPr$, $-CH_2-CH=CH-cycPr$, $-CH_2-CH=CH-CH=CH_2$, $-CH_2-CH=C(CH_3)_2$, and $-CH=CH-CH_2-cycPr$;

R^3 is selected from:

H, F, Cl, Br, I, -OH, $-OCF_3$, -CN, $-NO_2$, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$,

R^4 is selected from:

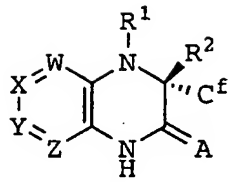
H, F, Cl, Br, I, -OH, OH, $-OCF_3$, -CN, $-NO_2$, $-C(=O)CH_3$, $-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^5 is selected from H, F, and Cl; and

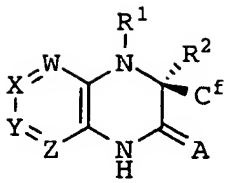
R^6 is selected from:

H, F, Cl -OH, $-OCF_3$, $-CF_3$, $-CH_3$, and $-OCH_3$.

In another preferred embodiment, the present invention provides a compound of Formula (Ia) or (Ib):



Ia



Ib

or a stereoisomer or pharmaceutically acceptable salt form thereof.

In a second embodiment, the present invention provides a novel pharmaceutical composition comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound of formula (I) or pharmaceutically acceptable salt form thereof.

In a third embodiment, the present invention provides a novel method for treating HIV infection which comprises administering to a host in need of such treatment a therapeutically effective amount of a compound of formula (I) or pharmaceutically acceptable salt form thereof.

In a fourth embodiment, the present invention provides a novel method of treating HIV infection which comprises administering, in combination, to a host in need thereof a therapeutically effective amount of:

(a) a compound of Formula (I); and,

(b) at least one compound selected from the group consisting of HIV reverse transcriptase inhibitors and HIV protease inhibitors.

In another preferred embodiment, the reverse transcriptase inhibitor is a nucleoside reverse transcriptase inhibitor.

In another more preferred embodiment, the HIV reverse transcriptase inhibitor is selected from AZT, 3TC, rescriptor, ddI, ddC, efavirenz, and d4T and the protease

inhibitor is selected from saquinavir, ritonavir, indinavir, VX-478, nelfinavir, KNI-272, CGP-61755, and U-103017.

In an even more preferred embodiment, the HIV reverse transcriptase inhibitor is selected from AZT, rescriptor, efavirenz, and 3TC and the protease inhibitor is selected from saquinavir, ritonavir, indinavir, and nelfinavir.

In a still further preferred embodiment, the nucleoside reverse transcriptase inhibitor is AZT.

In another still further preferred embodiment, the HIV reverse transcriptase inhibitor is efavirenz.

In another still further preferred embodiment, the protease inhibitor is indinavir.

In a fifth embodiment, the present invention provides a pharmaceutical kit useful for the treatment of HIV infection, which comprises a therapeutically effective amount of:

(a) a compound of Formula (I); and,

(b) at least one compound selected from the group consisting of HIV reverse transcriptase inhibitors and HIV protease inhibitors, in one or more sterile containers.

In a sixth embodiment, the present invention provides a novel method of inhibiting HIV present in a body fluid sample which comprises treating the body fluid sample with an effective amount of a compound of Formula (I).

In a seventh embodiment, the present invention to provides a novel a kit or container comprising a compound of formula (I) in an amount effective for use as a standard or reagent in a test or assay for determining the ability of a potential pharmaceutical to inhibit HIV reverse transcriptase, HIV growth, or both.

DEFINITIONS

As used herein, the following terms and expressions have the indicated meanings. It will be appreciated that the compounds of the present invention contain an asymmetrically substituted carbon atom, and may be isolated in optically active or racemic forms. It is well known in the art how to prepare optically active forms, such as by resolution of racemic forms or by synthesis, from optically active starting materials. All chiral, diastereomeric, racemic forms and all geometric isomeric forms of a structure are intended, unless the specific stereochemistry or isomer form is specifically indicated.

The processes of the present invention are contemplated to be practiced on at least a multigram scale, kilogram scale, multikilogram scale, or industrial scale. Multigram scale, as used herein, is preferably the scale wherein at least one starting material is present in 10 grams or more, more preferably at least 50 grams or more, even more preferably at least 100 grams or more. Multikilogram scale, as used herein, is intended to mean the scale wherein more than one kilogram of at least one starting material is used. Industrial scale as used herein is intended to mean a scale which is other than a laboratory scale and which is sufficient to supply product sufficient for either clinical tests or distribution to consumers.

The reactions of the synthetic methods claimed herein may be, as noted herein, carried out in the presence of a suitable base, said suitable base being any of a variety of bases, the presence of which in the reaction facilitates the synthesis of the desired product. Suitable bases may be selected by one of skill in the art of organic synthesis. Suitable bases include, but are not intended to be limited to, inorganic bases such as alkali metal, alkali earth metal, thallium, and ammonium hydroxides, alkoxides, phosphates, and carbonates, such as sodium hydroxide, potassium hydroxide, sodium carbonate, potassium carbonate, cesium carbonate, thallium hydroxide, thallium carbonate, tetra-n-butylammonium carbonate, and ammonium hydroxide. Suitable bases also

include organic bases, including but not limited to aromatic and aliphatic amines, such as pyridine; trialkyl amines such as triethylamine, N,N-diisopropylethylamine, N,N-diethylcyclohexylamine, N,N-dimethylcyclohexylamine, N,N,N'-triethylenediamine, N,N-dimethyloctylamine; 1,5-diazabicyclo[4.3.0]non-5-ene (DBN); 1,4-diazabicyclo[2.2.2]octane (DABCO); 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU); tetramethylethylenediamine (TMEDA); and substituted pyridines such as N,N-dimethylaminopyridine (DMAP), 4-pyrrolidinopyridine, 4-piperidinopyridine.

Suitable halogenated solvents include: carbon tetrachloride, bromodichloromethane, dibromochloromethane, bromoform, chloroform, bromochloromethane, dibromomethane, butyl chloride, dichloromethane, tetrachloroethylene, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethane, 2-chloropropane, hexafluorobenzene, 1,2,4-trichlorobenzene, o-dichlorobenzene, chlorobenzene, or fluorobenzene.

Suitable ether solvents include, but are not intended to be limited to, dimethoxymethane, tetrahydrofuran, 1,3-dioxane, 1,4-dioxane, furan, diethyl ether, ethylene glycol dimethyl ether, ethylene glycol diethyl ether, diethylene glycol dimethyl ether, diethylene glycol diethyl ether, triethylene glycol dimethyl ether, or t-butyl methyl ether.

Suitable protic solvents may include, by way of example and without limitation, water, methanol, ethanol, 2-nitroethanol, 2-fluoroethanol, 2,2,2-trifluoroethanol, ethylene glycol, 1-propanol, 2-propanol, 2-methoxyethanol, 1-butanol, 2-butanol, i-butyl alcohol, t-butyl alcohol, 2-ethoxyethanol, diethylene glycol, 1-, 2-, or 3- pentanol, neo-pentyl alcohol, t-pentyl alcohol, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, cyclohexanol, anisole, benzyl alcohol, phenol, or glycerol.

Suitable aprotic solvents may include, by way of example and without limitation, tetrahydrofuran (THF), dimethylformamide (DMF), dimethylacetamide (DMAC), 1,3-dimethyl-3,4,5,6-tetrahydro-2(1H)-pyrimidinone (DMPU), 1,3-

dimethyl-2-imidazolidinone (DMI), N-methylpyrrolidinone (NMP), formamide, N-methylacetamide, N-methylformamide, acetonitrile, dimethyl sulfoxide, propionitrile, ethyl formate, methyl acetate, hexachloroacetone, acetone, ethyl methyl ketone, ethyl acetate, sulfolane, N,N-dimethylpropionamide, tetramethylurea, nitromethane, nitrobenzene, or hexamethylphosphoramide.

Suitable hydrocarbon solvents include, but are not intended to be limited to, benzene, cyclohexane, pentane, hexane, toluene, cycloheptane, methylcyclohexane, heptane, ethylbenzene, m-, o-, or p-xylene, octane, indane, nonane, or naphthalene.

As used herein, the term "amine protecting group" (or "N-protected") refers to any group known in the art of organic synthesis for the protection of amine groups. As used herein, the term "amine protecting group reagent" refers to any reagent known in the art of organic synthesis for the protection of amine groups which may be reacted with an amine to provide an amine protected with an amine protecting group. Such amine protecting groups include those listed in Greene and Wuts, "Protective Groups in Organic Synthesis" John Wiley & Sons, New York (1991) and "The Peptides: Analysis, Synthesis, Biology, Vol. 3, Academic Press, New York (1981), the disclosure of which is hereby incorporated by reference. Examples of amine protecting groups include, but are not limited to, the following: 1) acyl types such as formyl, trifluoroacetyl, phthalyl, and p-toluenesulfonyl; 2) aromatic carbamate types such as benzyloxycarbonyl (Cbz) and substituted benzyloxycarbonyls, 1-(p-biphenyl)-1-methylethoxycarbonyl, and 9-fluorenylmethyloxycarbonyl (Fmoc); 3) aliphatic carbamate types such as tert-butyloxycarbonyl (Boc), ethoxycarbonyl, diisopropylmethoxycarbonyl, and allyloxycarbonyl; 4) cyclic alkyl carbamate types such as cyclopentyloxycarbonyl and adamantyloxycarbonyl; 5) alkyl types such as triphenylmethyl (trityl) and benzyl; 6) trialkylsilane such as trimethylsilane; and 7) thiol containing types such as phenylthiocarbonyl and dithiasuccinoyl.

Amine protecting groups may include, but are not limited to the following: 2,7-di-t-butyl-[9-(10,10-dioxo-10,10,10,10-tetrahydrothio-xanthyl)]methyloxycarbonyl; 2-trimethylsilyl-ethyloxycarbonyl; 2-phenylethyloxycarbonyl; 1,1-dimethyl-2,2-dibromoethyloxycarbonyl; 1-methyl-1-(4-biphenylyl)-ethyloxycarbonyl; benzyloxycarbonyl; p-nitrobenzyl-oxycarbonyl; 2-(p-toluenesulfonyl)ethyloxy-carbonyl; m-chloro-p-acyloxybenzyloxycarbonyl; 5-benzyisoxazolyl-methyloxycarbonyl; p-(dihydroxyboryl)benzyloxycarbonyl; m-nitrophenyloxycarbonyl; o-nitrobenzyloxycarbonyl; 3,5-dimethoxybenzyloxycarbonyl; 3,4-dimethoxy-6-nitrobenzyl-oxycarbonyl; N'-p-toluenesulfonylaminocarbonyl; t-amyloxy-carbonyl; p-decyloxybenzyloxycarbonyl; diisopropylmethyloxy-carbonyl; 2,2-dimethoxycarbonylvinyloxycarbonyl; di(2-pyridyl)methyloxycarbonyl; 2-furanylmethyloxycarbonyl; phthalimide; dithiasuccinimide; 2,5-dimethylpyrrole; benzyl; 5-dibenzylsuberyl; triphenylmethyl; benzylidene; diphenylmethylene; or methanesulfonamide.

As used herein, "alkyl" is intended to include both branched and straight-chain saturated aliphatic hydrocarbon groups having the specified number of carbon atoms; for example, "C_1-$_6$ alkyl" denotes alkyl having 1 to 6 carbon atoms, ie. methyl, ethyl, propyl, butyl, pentyl, hexyl, and branched isomers therin.. Examples of alkyls include, but are not limited to, methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, s-butyl, t-butyl, i-pentyl, n-pentyl, and s-pentyl. "Haloalkyl" is intended to include both branched and straight-chain saturated aliphatic hydrocarbon groups having the specified number of carbon atoms, substituted with 1 or more halogen (for example -C_vF_w where v = 1 to 3 and w = 1 to (2v+1)). Examples of haloalkyl include, but are not limited to, trifluoromethyl, trichloromethyl, pentafluoroethyl, pentachloroethyl, 2,2,2-trifluoroethyl, heptafluoropropyl, and heptachloropropyl. "Alkoxy" represents an alkyl group as defined above with the indicated number of carbon atoms attached through an oxygen bridge. Examples of alkoxy include, but are not limited to, methoxy, ethoxy, n-propoxy, i-propoxy, n-butoxy, s-butoxy, t-butoxy,

n-pentoxy, and s-pentoxy. "Cycloalkyl" is intended to include saturated ring groups, such as cyclopropyl, cyclobutyl, cyclopentyl, or cyclohexyl. "Alkenyl" is intended to include hydrocarbon chains of either a straight or branched configuration and one or more unsaturated carbon-carbon bonds which may occur in any stable point along the chain, such as ethenyl, propenyl, butenyl and the like. "Alkynyl" is intended to include hydrocarbon chains of either a straight or branched configuration and one or more triple carbon-carbon bonds which may occur in any stable point along the chain, such as ethynyl, propynyl, butynyl and the like.

"Halo" or "halogen" as used herein refers to fluoro, chloro, bromo and iodo. "Counterion" is used to represent a small, negatively charged species such as chloride, bromide, hydroxide, acetate, sulfate and the like.

As used herein, "aryl" or "aromatic residue" is intended to mean an aromatic moiety containing the specified number of carbon atoms, such as phenyl or naphthyl. As used herein, "carbocycle" or "carbocyclic residue" is intended to mean any stable 3- to 7- membered monocyclic or bicyclic or 7- to 14-membered bicyclic or tricyclic carbon ring, which may be saturated or partially unsaturated. Examples of such carbocyles include, but are not limited to, cyclopropyl, cyclopentyl, cyclohexyl, phenyl, biphenyl, naphthyl, indanyl, adamantyl, or tetrahydronaphthyl (tetralin).

As used herein, the term "heterocycle" or "heterocyclic system" is intended to mean a stable 5- to 6- membered monocyclic heterocyclic ring which is saturated partially unsaturated or unsaturated (aromatic), and which consists of carbon atoms and from 1 to 3 heteroatoms independently selected from the group consisting of N, O and S. The nitrogen and sulfur heteroatoms may optionally be oxidized. The heterocyclic ring may be attached to its pendant group at any heteroatom or carbon atom which results in a stable structure. The heterocyclic rings described herein may be substituted on carbon or on a nitrogen atom if the resulting compound is stable. If specifically noted, a nitrogen in the heterocycle may optionally be quaternized. It is preferred

that when the total number of S and O atoms in the heterocycle exceeds one, then these heteroatoms are not adjacent to one another. It is preferred that the total number of S and O atoms in the heterocycle is not more than one.

As used herein, the term "aromatic heterocyclic system" is intended to mean a stable 5- to 6- membered monocyclic heterocyclic aromatic ring which consists of carbon atoms and from 1 to 3 heterotams independently selected from the group consisting of N, O and S. It is preferred that the total number of S and O atoms in the aromatic heterocycle is not more than one.

Examples of heterocycles include, but are not limited to, 2-pyrrolidonyl, 2H-pyrrolyl, 4-piperidonyl, 6H-1,2,5-thiadiazinyl, 2*H*,6*H*-1,5,2-dithiazinyl, furanyl, furazanyl, imidazolidinyl, imidazolinyl, imidazolyl, isoxazolyl, morpholinyl, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, oxazolidinyl., oxazolyl, piperazinyl, piperidinyl, pteridinyl, piperidonyl, 4-piperidonyl, piperonyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazolidinyl, pyrazolinyl, pyrazolyl, pyridazinyl, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, pyrrolyl, tetrahydrofuranyl, 6*H*-1,2,5-thiadiazinyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thiazolyl, thienyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, and 1,3,4-triazolyl. Preferred heterocycles include, but are not limited to, pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl. Also included are fused ring and spiro compounds containing, for example, the above heterocycles.

As used herein, "HIV reverse transcriptase inhibitor" is intended to refer to both nucleoside and non-nucleoside inhibitors of HIV reverse transcriptase (RT). Examples of nucleoside RT inhibitors include, but are not limited to, AZT, ddC, ddI, d4T, and 3TC. Examples of non-nucleoside RT inhibitors include, but are not limited to,

efavirenz (DuPont Merck), rescriptor (delavirdine, Pharmacia and Upjohn), viviradine (Pharmacia and Upjohn U90152S), PNU142721 (Pharmacia and Upjohn), TIBO derivatives, BI-RG-587, nevirapine, L-697,661, LY 73497, and Ro 18,893 (Roche).

As used herein, "HIV protease inhibitor" is intended to refer to compounds which inhibit HIV protease. Examples include, but are not limited, saquinavir (Roche, Ro31-8959), ritonavir (Abbott, ABT-538), indinavir (Merck, MK-639), VX-478 (Vertex/Glaxo Wellcome), nelfinavir (Agouron, AG-1343), KNI-272 (Japan Energy), CGP-61755 (Ciba-Geigy), DMP450 (DuPont Merck), and U-103017 (Pharmacia and Upjohn). Additional examples include the cyclic protease inhibitors disclosed in WO93/07128, WO94/19329, WO94/22840, and PCT Application Number US96/03426 and the protease inhibitors disclosed in WO94/04993, WO95/33464, WO96/28,418, and WO96/28,464.

As used herein, "pharmaceutically acceptable salts" refer to derivatives of the disclosed compounds wherein the parent compound is modified by making acid or base salts thereof. Examples of pharmaceutically acceptable salts include, but are not limited to, mineral or organic acid salts of basic residues such as amines; alkali or organic salts of acidic residues such as carboxylic acids; and the like. The pharmaceutically acceptable salts include the conventional non-toxic salts or the quaternary ammonium salts of the parent compound formed, for example, from non-toxic inorganic or organic acids. For example, such conventional non-toxic salts include those derived from inorganic acids such as hydrochloric, hydrobromic, sulfuric, sulfamic, phosphoric, nitric and the like; and the salts prepared from organic acids such as acetic, propionic, succinic, glycolic, stearic, lactic, malic, tartaric, citric, ascorbic, pamoic, maleic, hydroxymaleic, phenylacetic, glutamic, benzoic, salicylic, sulfanilic, 2-acetoxybenzoic, fumaric, toluenesulfonic, methanesulfonic, ethane disulfonic, oxalic, isethionic, and the like.

The pharmaceutically acceptable salts of the present invention can be synthesized from the parent compound which

contains a basic or acidic moiety by conventional chemical methods. Generally, such salts can be prepared by reacting the free acid or base forms of these compounds with a stoichiometric amount of the appropriate base or acid in water or in an organic solvent, or in a mixture of the two; generally, nonaqueous media like ether, ethyl acetate, ethanol, isopropanol, or acetonitrile are preferred. Lists of suitable salts are found in *Remington's Pharmaceutical Sciences*, 17th ed., Mack Publishing Company, Easton, PA, 1985, p. 1418, the disclosure of which is hereby incorporated by reference.

The phrase "pharmaceutically acceptable" is employed herein to refer to those compounds, materials, compositions, and/or dosage forms which are, within the scope of sound medical judgment, suitable for use in contact with the tissues of human beings and animals without excessive toxicity, irritation, allergic response, or other problem or complication commensurate with a reasonable benefit/risk ratio.

"Prodrugs" are intended to include any covalently bonded carriers which release the active parent drug according to formula (I) or other formulas or compounds of the present invention *in vivo* when such prodrug is administered to a mammalian subject. Prodrugs of a compound of the present invention, for example formula (I), are prepared by modifying functional groups present in the compound in such a way that the modifications are cleaved, either in routine manipulation or *in vivo*, to the parent compound. Prodrugs include compounds of the present invention wherein the hydroxy or amino group is bonded to any group that, when the prodrug is administered to a mammalian subject, cleaves to form a free hydroxyl or free amino, respectively. Examples of prodrugs include, but are not limited to, acetate, formate and benzoate derivatives of alcohol and amine functional groups in the compounds of the present invention, and the like.

"Stable compound" and "stable structure" are meant to indicate a compound that is sufficiently robust to survive isolation to a useful degree of purity from a reaction

mixture, and formulation into an efficacious therapeutic agent. Only stable compounds are contempleted by the present invention.

"Substituted" is intended to indicate that one or more hydrogens on the atom indicated in the expression using "substituted" is replaced with a selection from the indicated group(s), provided that the indicated atom's normal valency is not exceeded, and that the substitution results in a stable compound. When a substituent is keto (i.e., =O) group, then 2 hydrogens on the atom are replaced.

"Therapeutically effective amount" is intended to include an amount of a compound of the present invention or an amount of the combination of compounds claimed effective to inhibit HIV infection or treat the symptoms of HIV infection in a host. The combination of compounds is preferably a synergistic combination. Synergy, as described for example by Chou and Talalay, Adv. Enzyme Regul. 22:27-55 (1984), occurs when the effect (in this case, inhibition of HIV replication) of the compounds when administered in combination is greater than the additive effect of the compounds when administered alone as a single agent. In general, a synergistic effect is most clearly demonstrated at suboptimal concentrations of the compounds. Synergy can be in terms of lower cytotoxicity, increased antiviral effect, or some other beneficial effect of the combination compared with the individual components.

SYNTHESIS

The compounds of the present invention can be prepared in a number of ways well known to one skilled in the art of organic synthesis. The compounds of the present invention can be synthesized using the methods described below, together with synthetic methods known in the art of synthetic organic chemistry, or variations thereon as appreciated by those skilled in the art. Preferred methods include but are not limited to those methods described below. Each of the references cited below are hereby incorporated herein by reference.

The following abbreviations are used herein:

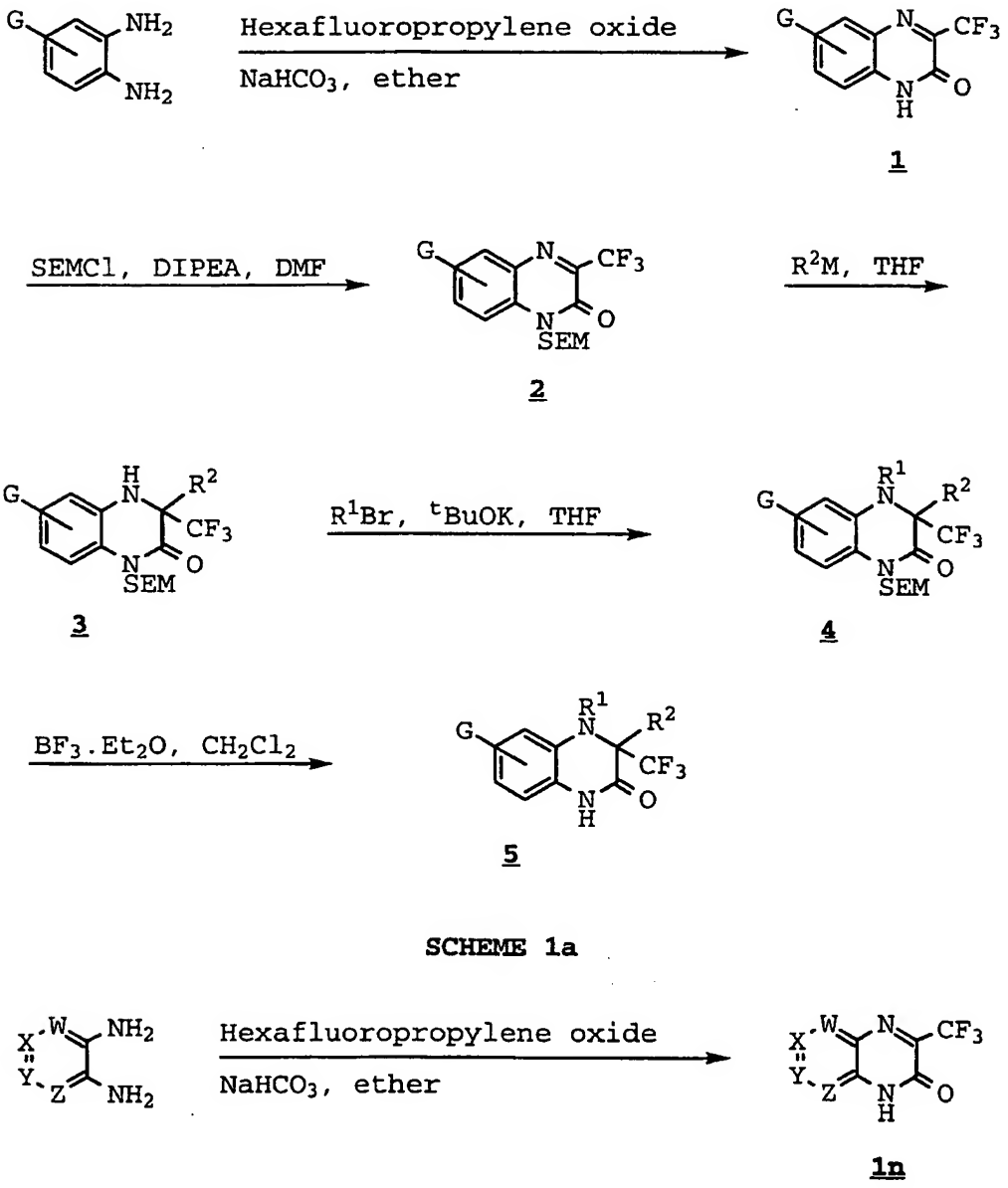
cycPr	cyclopropyl
ACN	acetonitrile
AcOH	acetic acid
CAN	ceric ammonium nitrate
DCE	dichloroethane
DIBAL-H	diisobutylaluminum hydride
DIPEA	diisopropylethylamine
DMAP	4-dimethylaminopyridine
DMF	*N,N*-dimethylformamide
EtOAc	ethyl acetate
EtOH	ethyl alcohol
MCPBA	m-chloroperoxybenzoic acid
PMBCl	p-methoxybenzyl chloride
pyr	pyridine
SEMCl	2,-(trimethylsilyl)ethoxymethyl chloride
TEA	triethyl amine
TFA	trifluoroacetic acid
THF	tetrahydrofuran

In the Schemes which follow: C^f is shown as a CF_3 group, but could be any one of the presently described R^1 groups; G represents R^3, R^{3a}, R^{3b}, or R^{3c} or any combination of these groups.

Scheme 1 illustrates a method for making 3,3-disubstituted-3,4-dihydroquinoxalin-2-ones starting from an appropriately substituted *ortho*-phenylenediamine. The phenylenediamine is stirred with condensed hexafluoropropylene oxide to form compounds of formula **1**, after which the cyclic amide moiety of **1** is protected, for example with SEM, to form compounds of formula **2**. Addition of appropriately substituted organometallics, R^2M, provide the 3,3-disubstituted compounds **3**. Treatment with base is followed by the addition of an appropriately substituted alkyl halide, R^1Br, to form compounds of formula **4**. The

product **4** are deprotected to give compounds of the present invention.

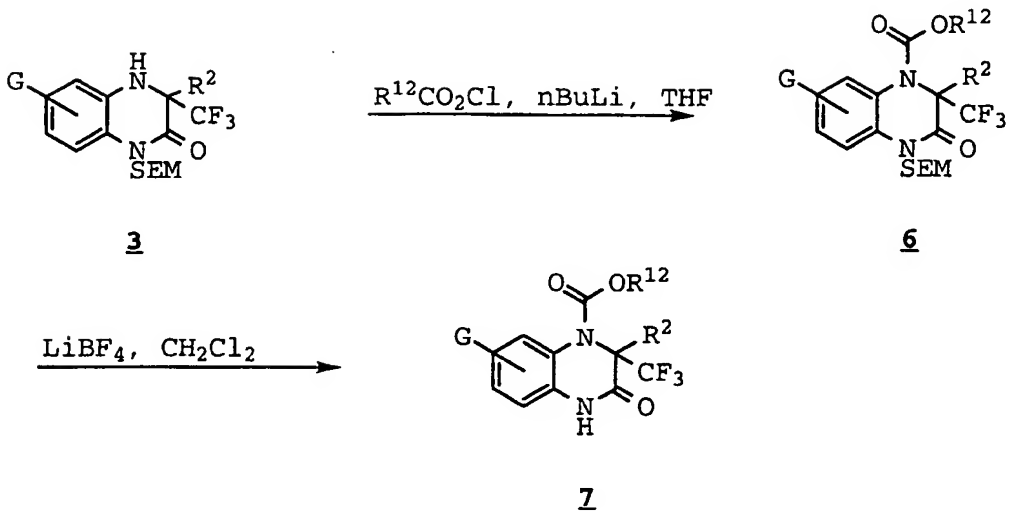
SCHEME 1



SCHEME 1a

Scheme 1a illustrates a method, analogous to Scheme 1, of making derivatives to tetrahydroquinoxalinone compounds of formula **5** wherein W, X, Y, and/or Z are nitrogen.

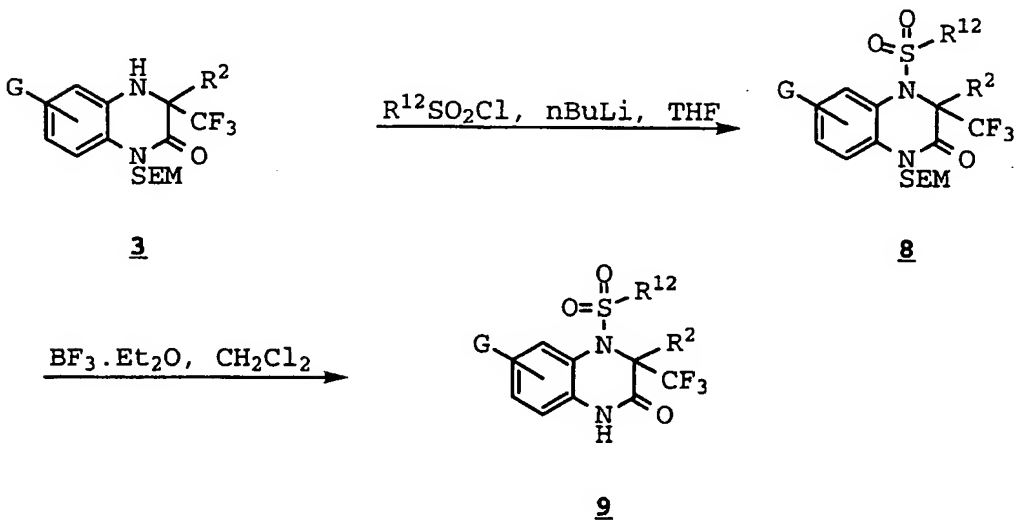
SCHEME 2



3 **6** **7**

Scheme 2 illustrates the acylation of 3,4-dihydro-quinoxalin-2-ones. Treatment of compounds of formula **3**, as can be prepared by Scheme 1, with base is followed by the addition of an appropriately substituted chloroformate, $R^{12}CO_2Cl$ to form compounds of formula **6**. The product **6** is deprotected to give compounds of formula **7**.

SCHEME 3

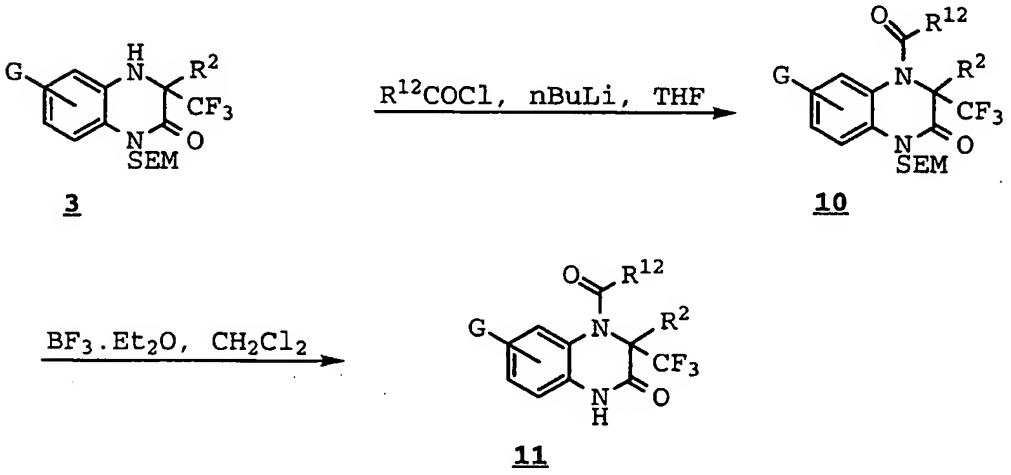


3 **8** **9**

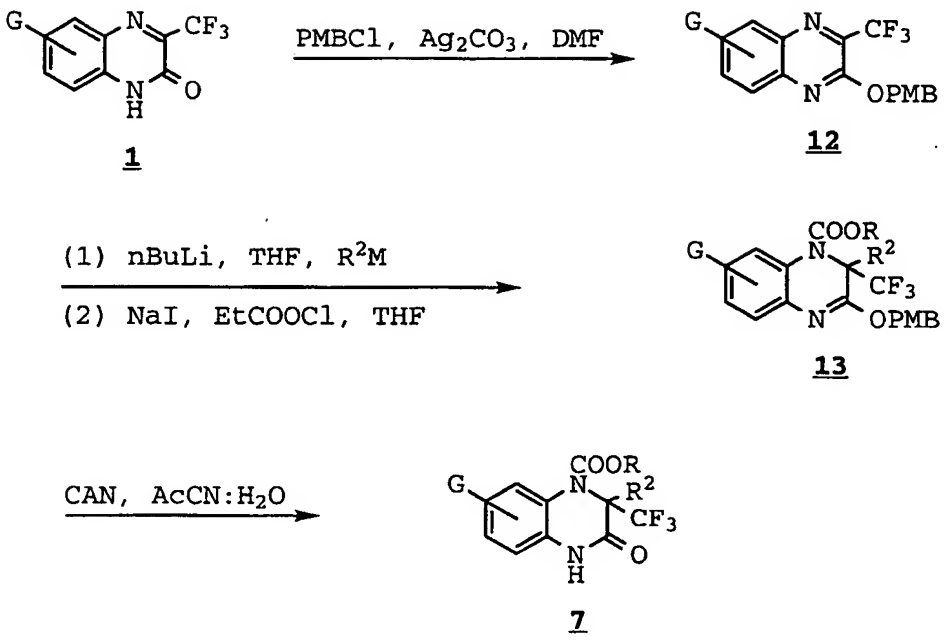
In analogous fashion to Scheme 2, treatment of a compound of formula **3** with base followed by an appropriately substituted sulfonyl chloride, $R^{12}SO_2Cl$, provide protected compounds **8**, as shown in Scheme 3. The product is deprotected to give compounds of formula **9**.

Analogous to Schemes 2 and 3, Scheme 4 describes the preparation of amides, **10**, from acid chlorides $R^{12}COCl$. In an alternative route to the synthesis of 3,4-dihydroquinoxalin-2-ones, as shown in Scheme 5, a substituted quinoxalin-2-one, **1**, can be O-protected to form a compound of formula **12**. The addition of an organometallic reagent R^2M followed by the quenching of the resulting anion with a chloroformate can produce compounds of formula **13**. The deprotection of a compound **13** will result in compounds of formula **7**.

SCHEME 4



SCHEME 5

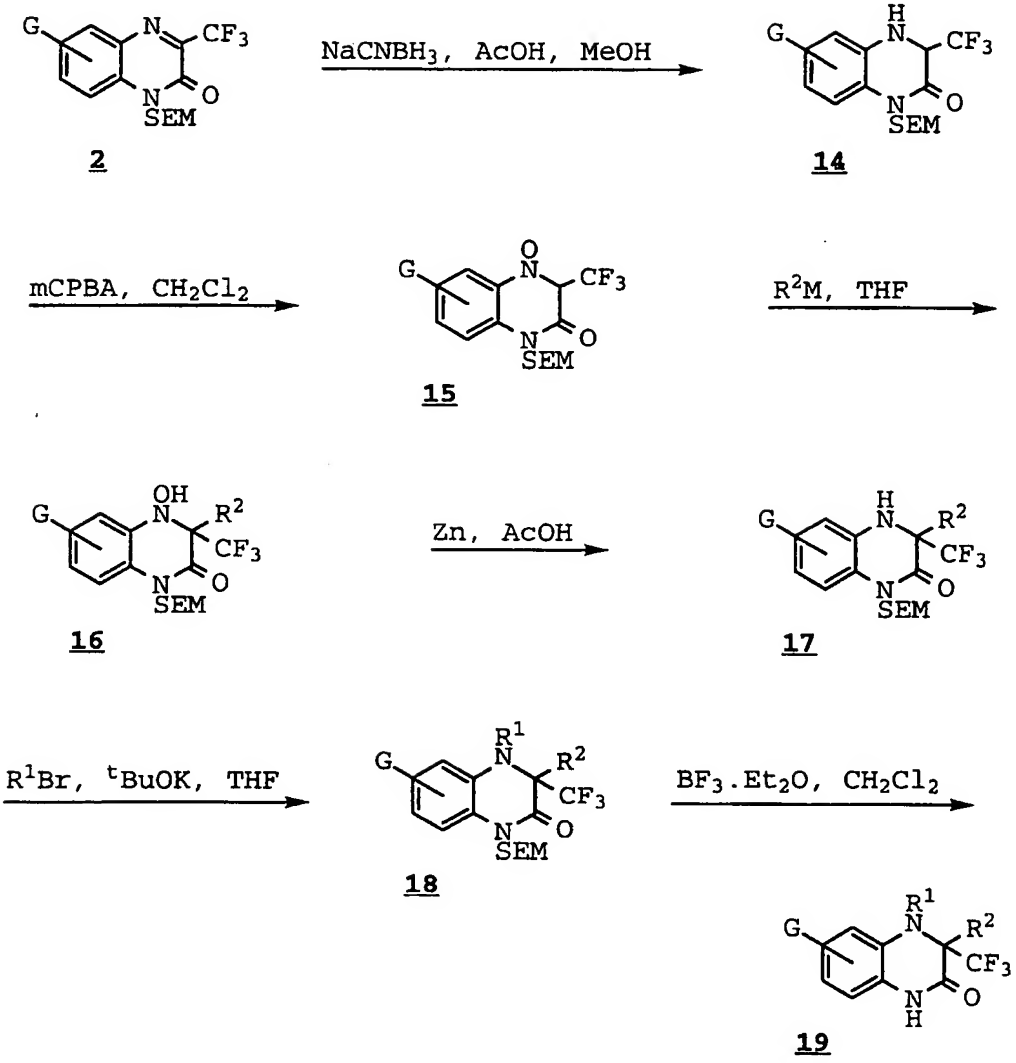


1 12 13 7

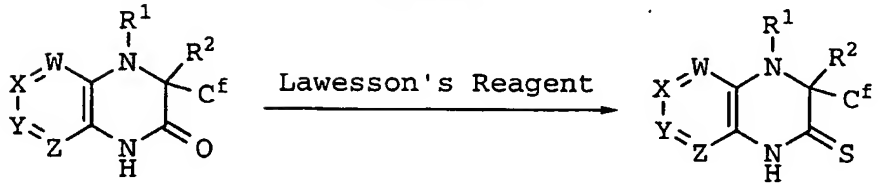
Scheme 6 illustrates yet another route for the preparation of compounds of the present invention. N-oxide compound **15** can provide a substrate for the addition of organometallic species R^2M, followed by the reductive cleavage of the resulting N-hydroxy compound to form compounds of formula **17**. Subsequent substitution at the 4-position by R^1 radicals is performed as previously described.

Compounds the present invention that are thioamides can be prepared as illustrated in Sceme 7 by treating the corresponding amides with either Lawesson's reagent [2,4-bis(4-methoxyphenyl)-1,3-dithia-2,4-diphosphetane-2,4-disulfide] or phosphorous pentasulfide.

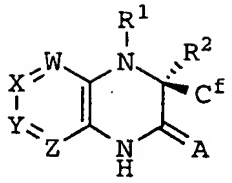
SCHEME 6



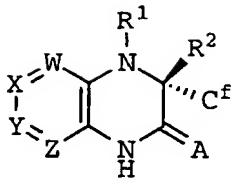
SCHEME 7



One isomer of a compound of Formula (I) may display superior activity compared with the other. Thus, both of the following stereochemistries, (Ia) and (Ib), are considered to be a part of the present invention.



(Ia)



(Ib)

When required, separation of the racemic material can be achieved by HPLC using a chiral column or by a resolution using a resolving agent such as camphonic chloride as in Steven D. Young, et al, *Antimicrobial Agents and Chemotheraphy,* **1995**, 2602-2605. A chiral compound of Formula (I) may also be directly synthesized using a chiral catalyst or a chiral ligand, e.g. Andrew S. Thompson, et al, *Tet. lett.* **1995**, *36*, 8937-8940. In addition, separation may be achieved by selective cystallization, optionally in the presence of a chiral acid or base thereby forming a chiral salt.

Other features of the invention will become apparent in the course of the following descriptions of exemplary embodiments which are given for illustration of the invention and are not intended to be limiting thereof.

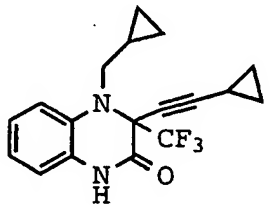
Examples

Abbreviations used in the Examples are defined as follows: anal. for combustion analysis, "g" for gram or grams, HRMS for high resolution mass spectrometry, "mg" for milligram or milligrams, "mL" for milliliter or milliliters, "mmol" for millimole or millimoles, "h" for hour or hours, "HPLC" for high performance liquid chromatography, "M" for molar, "min" for minute or minutes, "MHz" for megahertz, "MS" for mass spectroscopy, "TLC" for thin layer chromatography.

For further clarification of the stereochemistry, in compounds with stereochemistry designated as "*rel*-(3S,5S)" the 3-substituent is *cis* to the 5-trifluoromethyl group while in compounds with stereochemistry designated as "*rel*-(3R,5S)" the 3-substituent is *trans* to the 5-trifluoromethyl group.

EXAMPLE 1

Preparation of 4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



Step A: Preparation of compound of formula 1 wherein G = H

To a slurry of 1,2-phenylenediamine (10.8 g, 100 mmol) in ether (200 mL) at room temperature was added sodium bicarbonate (25.4 g, 300 mmol) followed by the condensation of hexafluoropropylene oxide (21 g, 120 mmol) and the resulting reaction mixture was allowed to stir at room temperature for 3 hours. The reaction mixture is diluted with water (500 mL) and extracted with EtOAc (3x200 mL). The combined EtOAc extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo to provide 19.3 g of compound of formula 1 (21.4 g theoretical, 90%). ^1H NMR (300 MHz, CD_3COCD_3) δ 11.67(br s, 1H), 7.93(m, 1H), 7.75(m, 1H), 7.46(m, 2H). ^{19}F NMR (282 MHz, CD_3COCD_3) δ -70.93(s, 3F). High resolution mass spec: calculated for $C_9H_6N_2OF_3$ $(M+H)^+$: 215.0423; found: 215.0432.

Step B: Preparation of compound of formula 2 wherein G = H

To a solution of quinoxalin-2-one of formula 1 (5.64 g, 26.3 mmol) in DMF (120 mL) at room temperature was added diisopropylethylamine (18.32 mL, 105.2 mmol) followed by SEMCl (9.28 mL, 52.6 mmol) and the resulting reaction mixture was allowed to stir at room temperature for 14 hours. The reaction mixture is poured onto 1N HCl and extracted with ether (3x100 mL). The combined ether extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 10% EtOAc-hexanes eluant) provided 8.15

g of compound of formula **2** (9.05 g theoretical, 90%). ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.02(m, 1H), 7.74(m, 2H), 7.48(m, 1H), 5.77(s, 2H), 3.74(t, *J* = 8Hz, 2H), 0.98(t, *J* = 8Hz, 2H), 0.01(s, 9H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -61.53 s, 3F). Mass spec. (NH_3-CI): 345$(M+H)^+$ (54.6%), 317 (100%).

Step C: Preparation of compound of formula **3** wherein G = H, R^2 = cyclopropylacetylene

To a solution of cyclopropylacetylene (23.4 mL, 106.2 mmol) in THF (150 mL) at 0°C was added nBuLi (59 mL, 94.4 mmol) and the resulting reaction mixture was allowed to stir at 0°C for 30 minutes. Thereafter the reaction mixture was cannulated to stirred solution of quinoxalinone of formula **2** (8.15 g, 23.6 mmol) in THF (300 mL) at -78°C. The dry ice bath is removed and the reaction mixture is stirred for an additional 20 minutes. The reaction mixture is poured onto saturated NH_4Cl and extracted with ether (3x100 mL) and the combined ether extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 10% EtOAc-hexanes eluant) provided 8.95 g of compound of formula **3**, (9.68 g theoretical, 92%). ^{1}H NMR (300 MHz, $CDCl_3$) δ 7.36m, 1H), 7.26(m, 1H), 7.08(m, 2H), 6.91(m, 1H), 5.52(d, *J* = 11Hz, 1H), 5.30(d, *J* = 11Hz, 1H), 3.61(t, *J* = 8Hz, 2H), 1.38(m, 1H), 0.93(t, *J* = 8Hz, 2H), 0.85(m, 2H), 0.54(m, 2H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -75.22(s, 3F). Mass spec. (NH_3-CI): 411$(M+H)^+$, 5.2%, 383 (100%).

Step D: Preparation of compound of formula **4** wherein G = H, R^2 = cyclopropylacetylene and R^1 = cyclopropylmethyl

To a solution of protected quinoxalinone of formula **3** (123 mg, 0.3 mmol) in DMF (4 mL) at room temperature was added ^{t}BuOK in THF (1.5 mL, 1.5 mmol) was added cyclopropylmethyl bromide (290 µl, 3.0 mmol) and the resulting reaction mixture was allowed to stir at 80°C for 14 hours. The reaction mixture is poured onto water and extracted with ether (3x50 mL) and the combined ether extracts were dried over anhydrous

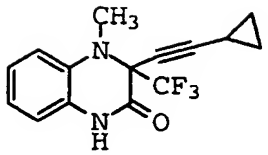
Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 10% EtOAc-hexanes eluant) provided 69 mg of compound of formula **4**, (139 mg theoretical, 50%). ^1H NMR (300 MHz, $CDCl_3$) δ 7.42(m, 1H), 7.12(m, 1H), 7.02(m, 1H), 6.94(m, 1H), 5.94(d, *J* = 11Hz, 1H), 5.05(d, *J* = 11Hz, 1H), 3.9(m, 1H), 3.68(t, *J* = 8Hz, 2H), 3.45(m, 1H), 1.42(m, 1H), 1.2(m, 1H), 0.9(m, 6H), 0.6(m, 1H), 0.45(m, 1H), 0.35(m, 2H), 0.01(s, 9H). Mass spec. (NH_3-CI): 465$(M+H)^+$, 50%, 437 (90%), 335(M-SEM+H^+, 100%).

Step E:

To a solution of the alkylated quinoxalinone of formula **4** (69 mg, 0.15 mmol) in CH_2Cl_2 (1 mL) at room temperature was added $BF_3.Et_2O$ (95 μL, 0.75 mmol) and the resulting reaction mixture was allowed to stir at room temperature for 20 minutes. The reaction mixture was poured onto saturated $NaHCO_3$ and extracted with CH_2Cl_2 (3x25 mL) and the combined CH_2Cl_2 extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. The residue was taken up in MeOH (1 mL) and 15% NaOH (1mL) was added to the reaction and the resulting reaction mixture was allowed to stir at room temperature for 10 minutes. The reaction mixture was poured onto water and extracted with CH_2Cl_2 (3x25 mL) and the combined CH_2Cl_2 extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 10% EtOAc-hexanes eluant) provided 41 mg of the title compound, (50 mg theoretical, 82%). ^1H NMR (300 MHz, $CDCl_3$) δ 9.46(br s, 1H), 7.1(m, 1H), 6.95(m, 1H), 6.85(m, 2H), 3.87(dd, *J* = 4, 15Hz, 1H), 3.35(dd, *J* = 8, 15Hz), 1.4(m, 1H), 1.2(m, 1H), 0.9(m, 4H), 0.6(m, 1H), 0.4(m, 3H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.38(s, 3F). High resolution mass spec: calculated for $C_{18}H_{18}N_2OF_3$ $(M+H)^+$: 335.1371; found: 335.1371.

EXAMPLE 2

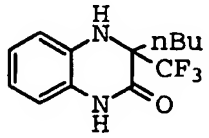
Preparation of 4-(methyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step D methyl iodide was used instead of cyclopropylmethyl bromide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.75(br s, 1H), 7.1(m, 1H), 6.85(m, 3H), 3.25(s, 3H), 1.4(m, 1H), 0.85(m, 4H). High resolution mass spec: calculated for $C_{15}H_{14}N_2OF_3$ $(M+H)^+$: 295.1058; found: 295.1073.

EXAMPLE 3

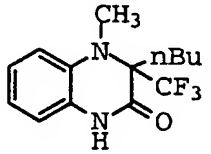
Preparation of 3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step C *n*-butyl magnesium chloride was used instead of lithium cyclopropyl acetylide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.8(br s, 1H), 6.9(m, 1H), 6.75(m, 3H), 4.05(s, 1H), 2.2(m, 1H), 1.85(m, 2H), 1.35(m, 2H), 0.9(m, 3H). High resolution mass spec: calculated for $C_{13}H_{16}N_2OF_3$ $(M+H)^+$: 273.1214; found: 273.1210.

EXAMPLE 4

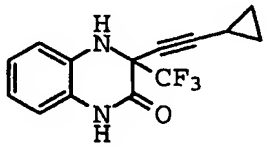
Preparation of 4-(methyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step C *n*-butyl magnesium chloride was used instead of lithium cyclopropyl acetylide and in Step D methyl iodide was used instead of cyclopropylmethyl bromide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.85(br s, 1H), 7.05(m, 1H), 6.8(m, 3H), 2.95(s, 3H), 2.65(m, 2H), 2.1(m, 1H), 1.4(m, 4H), 0.95(m, 3H). High resolution mass spec: calculated for $C_{14}H_{18}N_2OF_5$ $(M+H)^+$: 287.1371; found: 287.1362.

EXAMPLE 5

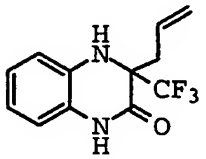
Preparation of 3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, Step C: ^{1}H NMR (300 MHz, $CDCl_3$) δ 9.0(br s, 1H), 7.0(m, 1H), 6.85(m, 2H), 6.8(m, 1H), 4.45(br s, 1H), 1.4(m, 1H), 0.8-0.6(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -77.13(s, 3F). High resolution mass spec: calculated for $C_{14}H_{11}N_2OF_5$ $(M)^+$: 280.0823; found: 280.0828.

EXAMPLE 6

Preparation of 3-(allyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

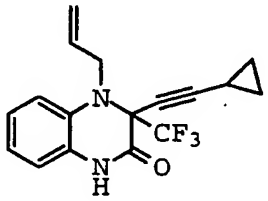


The title compound was prepared in a manner similar to the product of Example 1, except that in Step C allyl magnesium bromide was used instead of lithium cyclopropyl acetylide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.25(br s, 1H), 6.95(m, 1H), 6.75(m, 3H), 5.85(m, 1H), 5.25(m, 2H), 4.2(br s, 1H),

3.1(m, 1H), 2.65(m, 1H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -71.16(s, 3F). High resolution mass spec: calculated for $C_{12}H_{12}N_2OF_3$ $(M+H)^+$: 257.0901; found: 257.0898.

EXAMPLE 7

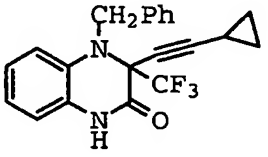
Preparation of 4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step D allyl iodide was used instead of cyclopropylmethyl bromide: ^1H NMR (300 MHz, $CDCl_3$) δ 9.4(br s, 1H), 7.0(m, 1H), 6.8(m, 3H), 5.8(m, 1H), 5.2(m, 2H), 4.6(m, 1H), 4.2(m, 1H), 1.4(m, 1H), 0.9(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -74.49(s, 3F). High resolution mass spec: calculated for $C_{17}H_{16}N_2OF_3$ $(M+H)^+$: 321.1214; found: 321.1198.

EXAMPLE 8

Preparation of 4-(benzyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

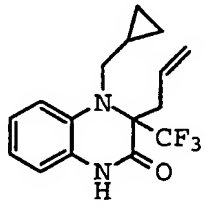


The title compound was prepared in a manner similar to the product of Example 1, except that in Step D benzyl bromide was used instead of cyclopropylmethyl bromide: ^1H NMR (300 MHz, $CDCl_3$) δ 8.85(br s, 1H), 7.3(m, 5H), 7.25(m, 1H), 6.8(m, 3H), 5.3(d, J = 11Hz, 1H), 4.6(d, J = 11Hz, 1H), 1.35(m, 1H), 0.8(m, 2H), 0.6(m, 2H). ^{19}F NMR (282 MHz, $CDCl_3$)

δ -78.08(s, 3F). High resolution mass spec: calculated for $C_{21}H_{18}N_2OF_5$ $(M+H)^+$: 371.1371; found: 371.1365.

EXAMPLE 9

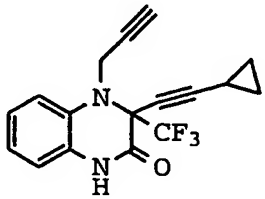
Preparation of 4-(cyclopropylmethyl)-3-(allyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step C allyl magnesium bromide was used instead of lithium cyclopropyl acetylide: ^1H NMR (300 MHz, $CDCl_3$) δ 8.35(br s, 1H), 7.1(M, 2H), 6.85(m, 1H), 6.75(m, 1H), 5.9(m, 1H), 5.25(m, 2H), 3.45(M, 2H), 3.2(m, 1H), 2.8(M, 1H), 1.0(m, 1H), 0.7(m, 1H), 0.55(m, 1H), 0.3(m, 2H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -70.22(s, 3F). High resolution mass spec: calculated for $C_{16}H_{18}N_2OF_3$ $(M+H)^+$: 311.1371; found: 311.1325.

EXAMPLE 10

Preparation of 4-(propargyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

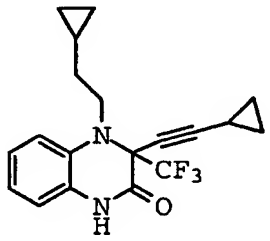


The title compound was prepared in a manner similar to the product of Example 1, except that in Step D propargyl bromide was used instead of cyclopropylmethyl bromide: ^1H NMR (300 MHz, $CDCl_3$) δ 9.35(br s, 1H), 7.15(m, 2H), 6.95(m, 2H), 4.6(dd, J = 2,18Hz, 1H), 4.4(dd, J = 2,18Hz, 1H), 2.25(t, J = 2Hz, 1H), 1.4(m, 1H), 0.9(m, 4H). Anal. ($C_{17}H_{13}N_2OF_3$) Calcd:

C, 64.15; H, 4.126; N, 8.80; Found: C, 64.23; H, 4.00; N, 8.61.

EXAMPLE 11

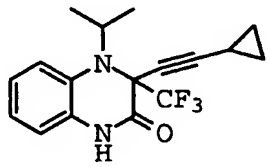
Preparation of 4-(cyclopropylethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step D cyclopropylethyl bromide was used instead of cyclopropylmethyl bromide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 9.2(br s, 1H), 7.0(m, 1H), 6.8(M, 3H), 4.0(m, 1H), 3.65(m, 1H), 1.6-1.35(m, 3H), 0.9(m, 3H), 0.7(m, 1H), 0.45(m, 1H), 0.1(m, 1H). Anal. ($C_{19}H_{19}N_2OF_3$) Calcd: C, 65.51; H, 5.507; N, 8.04; F, 16.36; Found: C, 65.23; H, 5.51; N, 8.05; F, 15.97.

EXAMPLE 12

Preparation of 4-(isopropyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

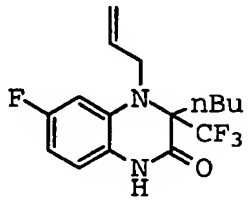


The title compound was prepared in a manner similar to the product of Example 1, except that in Step D isopropyl iodide was used instead of cyclopropylmethyl bromide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.4(br s, 1H), 7.05(m, 1H), 7.0(m, 1H), 6.9(m, 1H), 6.8(m, 1H), 4.6(p, J = 7Hz, 1H), 1.45(d, J 7Hz, 3H), 1.4(m, 1H), 1.2(d, J = 7Hz, 3H), 0.9(m, 4H). High

resolution mass spec: calculated for $C_{17}H_{18}N_2OF_3$ $(M+H)^+$: 323.1371; found: 323.1364.

EXAMPLE 13

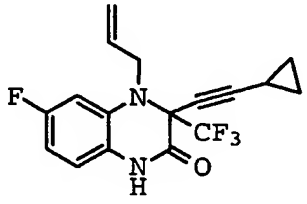
Preparation of 6-(fluoro)-4-(allyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step A 4-fluoro-1,2-phenylenediamine was used instead of 1,2-phenylenediamine, in Step C *n*butyl magnesium bromide was used instead of lithium cyclopropylmethyl acetylide and in Step D allyl iodide was used instead of cyclopropylmethyl bromide: ^1H NMR (300 MHz, $CDCl_3$) δ 9.2(br s, 1H), 6.65(m, 1H), 6.5(m, 2H), 5.8(m, 1H), 5.35(m, 2H), 4.0(m, 2H), 2.65(m, 1H), 2.0(m, 1H), 1.4(m, 4H), 0.95(m, 3H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.60(s, 3F), -147.85(s, 1F). High resolution mass spec: calculated for $C_{16}H_{18}NOF_4$ $(M)^+$: 330.1335; found: 330.1332.

EXAMPLE 14

Preparation of 6-(fluoro)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

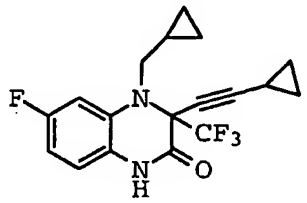


The title compound was prepared in a manner similar to the product of Example 1, except that in Step D allyl iodide was used instead of cyclopropylmethyl bromide: ^1H NMR (300 MHz, $CDCl_3$) δ 9.65(br s, 1H), 6.6(m, 1H), 6.5(m, 2H), 5.8(m,

1H), 5.2(m, 2H), 4.6(m, 1H), 4.1(m, 1H), 1.4(m, 1H), 0.9(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -74.62(s, 3F), -117.46(s, 1F). High resolution mass spec: calculated for $C_{17}H_{15}N_2OF_4$ $(M+H)^+$: 339.1120; found: 339.1143.

EXAMPLE 15

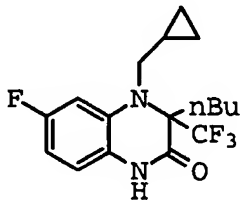
Preparation of 6-(fluoro)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1: ^1H NMR (300 MHz, $CDCl_3$) δ 9.0(br s, 1H), 6.75(m, 2H), 6.55(m, 1H), 3.8(m, 1H), 3.35(m, 1H), 1.4(m, 1H), 1.15(m, 1H), 0.9(m, 4H), 0.6(m, 1H), 0.5(m, 1H), 0.35(m, 2H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -74.34(s, 3F), -117.47(s, 1F). Anal. ($C_{18}H_{16}N_2OF_4$ $1/2H_2O$) Calcd: C, 59.83; H, 4.74; N, 7.75; Found: C, 59.56; H, 4.61; N, 7.37.

EXAMPLE 16

Preparation of 6-(fluoro)-4-(cyclopropylmethyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

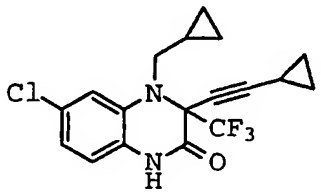


The title compound was prepared in a manner similar to the product of Example 1, except that in Step C *n*butyl magnesium bromide was used instead of lithium cylcopropylmethyl acetylide: ^1H NMR (300 MHz, $CDCl_3$) δ 96.6(br s, 1H), 6.7(m, 2H), 6.5(m, 1H), 3.45(m, 1H), 3.15(m, 1H),

2.75(m, 1H), 1.9(m, 1H), 1.75(m, 1H), 1.4(m, 3H), 1.05(m, 1H), 0.95(m, 3H), 0.65(m, 2H), 0.35(m, 2H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.36(s, 3F), -117.79(s, 1F). Anal. ($C_{17}H_{20}N_2OF_4$) Calcd: C, 59.30; H, 5.85; N, 8.145; Found: C, 58.98; H, 5.73; N, 7.90.

EXAMPLE 17

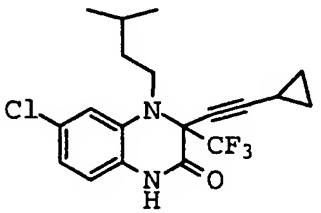
Preparation of 6-(chloro)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step A 4-chloro-1,2-phenylenediamine was used instead of 1,2-phenylenediamine: ^1H NMR (300 MHz, $CDCl_3$) δ 9.5(br s, 1H), 6.9(m, 1H), 6.8(m, 2H), 1.4(m, 1H), 1.2(m, 1H), 0.95(m, 4H), 0.6(m, 1H), 0.5(m, 1H), 0.35(m, 2H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -71.80(s, 3F). Anal. ($C_{18}H_{16}N_2OClF_3$) Calcd: C, 58.62; H, 4.37; N, 7.606; F, 15.45; Cl, 9.61; Found: C, 58.27; H, 4.39; N, 7.46; F, 15.83; Cl, 9.62.

EXAMPLE 18

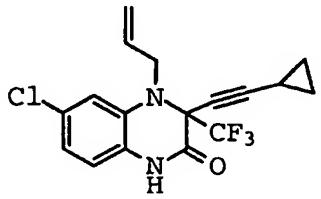
Preparation of 6-(chloro)-4-(isobutyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step D isoamyl bromide was used instead of cyclopropylmethyl bromide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 9.5(br s, 1H), 6.8(m, 2H), 6.7(m, 1H), 3.9(m, 1H), 3.6(m, 1H), 1.7(m, 1H), 1.6(M, 1H), 1.4(m, 2H), 0.95(d, *J* = 7Hz, 3H), 0.9(d, *J* = 7Hz, 3H), 0.9-0.8(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -71.67(s, 3F). Anal. ($C_{19}H_{20}N_2OClF_3$) Calcd: C, 59.30; H, 5.248; N, 7.289; F, 14.81; Cl, 9.21; Found: C, 59.12; H, 5.19; N, 7.04; F, 15.09; Cl, 9.22.

EXAMPLE 19

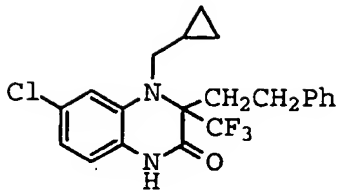
Preparation of 6-(chloro)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step D allyl iodide was used instead of cyclopropylmethyl bromide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 9.65(br s, 1H), 6.8(m, 2H), 6.75(m, 1H), 5.8(m, 1H), 5.3(m, 2H), 4.6(m, 1H), 4.1(m, 1H), 1.4(m, 1H), 0.9(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -71.88(s, 3F). Anal. ($C_{17}H_{14}N_2OClF_3$) Calcd: C, 57.56; H, 3.987; N, 7.906; F, 16.07; Cl, 9.99; Found: C, 57.87; H, 4.25; N, 7.61; F, 15.93; Cl, 9.82.

EXAMPLE 20

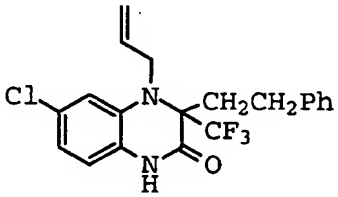
Preparation of 6-(chloro)-4-(cyclopropylmethyl)-3-(phenethyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step C phenethyl magnesium bromide was used instead of lithium cyclopropylmethyl acetylide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.9(br s, 1H), 7.25(m, 5H), 7.)(m, 1H), 6.8(m, 1H), 6.65(m, 1H), 3.5(m, 1H), 3.3(m, 1H), 3.0(m,2H), 2.75(m, 1H), 2.3(m, 1H), 1.1(m, 1H), 0.8(m, 2H), 0.4(m, 2H). High resolution mass spec: calculated for $C_{21}H_{20}N_2OF_3Cl$ $(M)^+$: 408.1216; found: 408.1197.

EXAMPLE 21

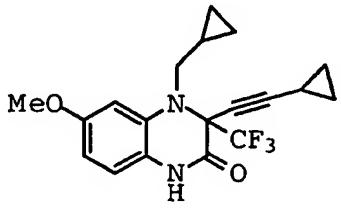
Preparation of 6-(chloro)-4-(allyl)-3-(phenethyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step C phenethyl magnesium bromide was used instead of lithium cyclopropylmethyl acetylide and in Step D allyl iodide was used instead of cyclopropylmethyl bromide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 9.5(br s, 1H), 7.25(m, 2H), 6.8(m, 1H), 5.9(m, 1H), 5.3(m, 1H), 5.)(m, 1H), 4.3(m, 1H), 4.1(m, 1H), 3.1(m, 1H), 2.9-2.8(m, 2H), 2.3(m, 1H). Anal. ($C_{20}H_{18}N_2OClF_3$) Calcd: C, 60.84; H, 4.605; N, 7.105; F, 14.44; Cl, 8.989; Found: C, 61.39; H, 4.83; N, 6.68; F, 14.25; Cl, 8.89.

EXAMPLE 22

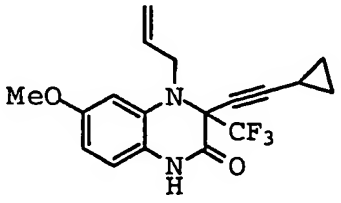
Preparation of 6-(methoxy)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step A 4-methoxy-1,2-phenylenediamine was used instead of 1,2-phenylenediamine: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.95(br s, 1H), 6.8(m, 1H), 6.6(m, 1H), 6.4(M, 1H), 3.9(m, 1H), 3.8(m, 3H), 3.4(m, 1H), 1.4(m, 1H), 1.2(m, 1H), 0.9(m, 4H), 0.6(m, 1H), 0.45(m, 1H), 0.35(m, 2H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.19(s, 3F). Anal. ($C_{19}H_{19}N_2O_2F_3$) Calcd: C, 62.63; H, 5.266; N, 7.698; F, 15.64; Found: C, 62.17; H, 5.36; N, 7.20; F, 14.79.

EXAMPLE 23

Preparation of 6-(methoxy)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

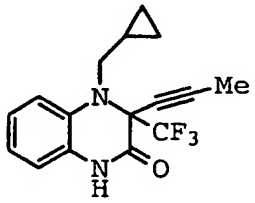


The title compound was prepared in a manner similar to the product of Example 1, except that in Step D allyl iodide was used instead of cyclopropylmethyl bromide: ^{1}H NMR (300 MHz, $CDCl_3$) δ 9.0(br s, 1H), 6.7(m, 1H), 6.35(m, 2H), 5.8(m, 1H), 5.2(m, 2H), 4.6(m, 1H), 4.1(M, 1H),3.8(s, 3H), 1.4(m, 1H), 0.95(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.44(s, 3F).

Anal. ($C_{18}H_{17}N_2O_2F_3$) Calcd: C, 61.71; H, 4.89; N, 8.006; F, 16.27; Found: C, 62.34; H, 4.94; N, 7.81; F, 15.00.

EXAMPLE 24

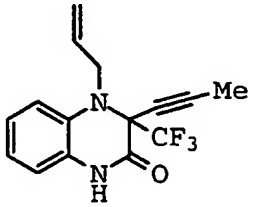
Preparation of 4-(cyclopropylmethyl)-3-(1-propynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 1, except that in Step C lithium propyne was used instead of lithium cylocpropylmethyl acetylide: ^1H NMR (300 MHz, $CDCl_3$) δ 8.1(br s, 1H), 7.1(m, 1H), 6.9(m, 1H), 6.8(m, 1H), 6.75(m, 1H), 3.85(m, 1H), 3.4(m, 1H), 2.)(s, 3H), 1.4(m, 1H), 0.6(m, 1H), 0.45(m, 1H), 0.35(m, 2H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -71.16(s, 3F). High resolution mass spec: calculated for $C_{16}H_{16}N_2OF_3$ $(M+H)^+$:309.1214; found:309.1224.

EXAMPLE 25

Preparation of 4-(allyl)-3-(1-propynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

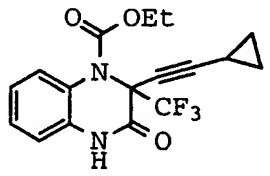


The title compound was prepared in a manner similar to the product of Example 1, except that in Step C lithium propyne was used instead of lithium cyclopropylmethyl acetylide and in Step D allyl iodide was used instead of cyclopropylmethyl bromide: ^1H NMR (300 MHz, $CDCl_3$) δ 8.4(br s,

1H), 7.0(m, 1H), 6.8(m, 3H), 5.8(m, 1H), 5.2(m, 2H), 4.6(m, 1H), 4.2(m, 1H0, 2.0(s, 3H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -71.79(s, 3F). High resolution mass spec: calculated for $C_{15}H_{14}N_2OF_3$ $(M+H)^+$: 295.1058; found: 295.1056.

EXAMPLE 26

Preparation of 4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



Step A: Preparation of compound of formula **6** wherein G = H, R^2 = cyclopropylacetylene and R^1 = COOEt

To a solution of protected quinoxalinone of formula **3** as prepared in step C in Example 1 (147 mg, 0.42 mmol) in THF (1.5 mL) at -78°C was added nBuLi (0.31 mL, 0.5 mmol) and stirred for 5 minutes. Thereafter ethyl chloroformate (80 µL, 0.84 mmol) was added to the reaction mixture which was allowed to warm to room temperature and stir for an hour. The reaction mixture was poured onto saturated ammonium chloride and extracted with ether (3x25 mL) and the combined ether extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 10% EtOAc-hexanes eluant) provided 122 mg of compound of formula **6**, (202 mg theoretical, 60%). ^1H NMR (300 MHz, $CDCl_3$) δ 7.46(m, 1H), 7.30(m, 1H), 7.15(m, 2H), 5.82(d, *J* = 11Hz, 1H), 5.15(d, *J* = 11Hz, 1H), 4.4(m, 2H), 3.7(m, 2H), 1.4(m, 4H), 0.9(m, 6H), 0.01(s, 9H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.06(s, 3F). Mass spec. (NH_3-CI): 483($M+H^+$, 100%).

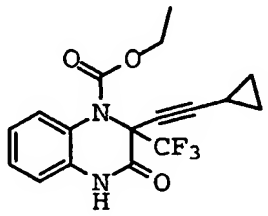
Step B:

To a solution of the acylated quinoxalinone of formula **6** (84 mg, 0.17 mmol) in CH_2Cl_2 (1 mL) at room temperature was added $LiBF_4$ (1*M* in ACN, 0.85 mL, 0.85 mmol) and the resulting

reaction mixture was heated to reflux for 14 hours. The reaction mixture was poured onto saturated water and extracted with ether (3x25 mL) and the combined ether extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 20% EtOAc-hexanes eluant) followed by a PTLC (SiO_2, 5% EtOAc-CH_2Cl_2 eluant) provided 15 mg of the title compound, (60 mg theoretical, 25%). ^1H NMR (300 MHz, $CDCl_3$) δ 8.06(br s, 1H), 7.35(m, 1H), 7.05(m, 2H), 6.8(m, 1H), 4.37(m, 2H), 1.4(m, 4H), 0.9(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.55(s, 3F). High resolution mass spec: calculated for $C_{17}H_{15}N_2O_3F_3$ $(M+H)^+$: 353.1113; found: 353.1093.

Example 26A

Preparation of 4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



Step A: Preparation of compound of formula **12** wherein G = H.

To a solution of the quinoxalinone of formula **1** as prepared in step A in Example 1 (3.55 g, 16.59 mmol) in DMF (35 mL) at room temperature was added silver carbonate (13.74 g, 49.7 mmol) follwed by PMBCl (2.48 mL, 18.25 mmol) and the resulting reaction mixture was allowed to stir at room temperature for 14 hours protected from light by aluminum foil. The reaction mixture was filtered through Celite and the filterate washed with water. The organic layers were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 5% EtOAc-hexanes) provided 1.28 g of compound of formula **12**, (5.54 g theoretical, 23%). ^1H NMR (300 MHz, $CDCl_3$) δ 8.2(m, 1H), 7.9(m, 1H), 7.8(m, 1H), 7.46(d, J = 9Hz, 2H), 6.93(d, J = 9Hz, 2H), 5.59(s, 2H), 3.81(s, 3H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -68.38(s, 3F). High resolution

mass spec: calculated for $C_{17}H_{14}N_2O_2F_3$ $(M+H)^+$: 335.1007; found: 335.1011.

Step B: Preparation of compound of formula **13** wherein G = H, R^2 = cyclopropylacetylene and R^1 = COOEt

To a solution of cyclopropylacetylene (297 µL, 2.25 mmol) in THF (5 mL) at 0°C was added nBuLi (1.25 mL, 2 mmol) and the resulting reaction mixture was allowed to stir at 0°C for 30 minutes. Thereafter the reaction mixture was cannulated to stirred solution of quinoxalinone of formula **12** (167 mg, 0.5 mmol) in THF (2.5 mL) at -78°C. The dry ice bath is removed and the reaction mixture is allowed to warm up as it stirred for an hour. NaI (300 mg, 2 mmol) was added to the reaction mixture and the resulting reaction mixture was allowed to stir at room temperature for 10 minutes. Thereafter ethyl chloroformate (478 µL, 5 mmol) was added to the reaction mixture was stirred for an additional 10 minutes. The reaction mixture is poured onto saturated NH_4Cl and extracted with ether (3x50 mL) and the combined ether extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 10% EtOAc-hexanes eluant) provided 78 mg of compound of formula **13**, (236 mg theoretical, 33%) ^1H NMR (300 MHz, $CDCl_3$) δ 7.37(d, J = 9Hz, 2H), 7.35(m, 1H), 7.2(m, 1H), 7.15(m, 2H), 6.9(d, J = 9Hz, 2H), 6.90(d, J = 12Hz, 1H), 5.26(d, J = 12Hz, 1H), 4.35(m, 2H), 3.81(s, 1H), 1.37(t, J = 7Hz, 3H), 1.25(m, 1H), 0.8(m, 2H), 0.6(m, 2H). Mass spec. (NH_3-CI): 473$(M+H)^+$ (20%), 353 ($M-PMB+H^+$, 100%).

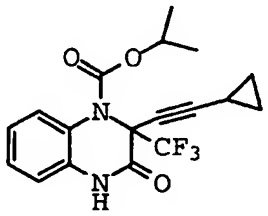
Step C:

To a stirred solution of the PMB protected quinoxalinone of formula **13** (28 mg, 0.06 mmol) in CH_3CN:H_2O (9:1) at room temperature was added CAN (162 mg, 0.30 mmol) and the resulting reaction mixture was allowed to stir at room temperature for one hour. The reaction mixture was poured onto water and extracted with EtOAc (3x25 mL) and the combined EtOAc extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 20% EtOAc-

hexanes eluant) provided 16 mg of the title compound, (21 mg theoretical, 76%). ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.06(br s, 1H), 7.35(m, 1H), 7.05(m, 2H), 6.8(m, 1H), 4.37(m, 2H), 1.4(m, 4H), 0.9(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.55(s, 3F). High resolution mass spec: calculated for $C_{17}H_{15}N_2O_3F_3$ $(M+H)^+$: 353.1113; found: 353.1093.

EXAMPLE 27

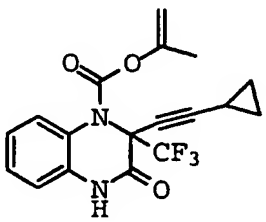
Preparation of 4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A isopropyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.4(br s, 1H), 7.35(m,1H), 7.15(m, 1H), 6.8(m, 1H), 5.15(p, J = 7Hz, 1H), 1.45(m, 1H), 1.4(d, J = 7Hz, 3Hz, 3H), 1.35(d, J = 7Hz, 3H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.46(s, 3F). High resolution mass spec: calculated for $C_{18}H_{18}N_2O_3F_3$ $(M+H)^+$: 367.1269; found: 367.1286.

EXAMPLE 28

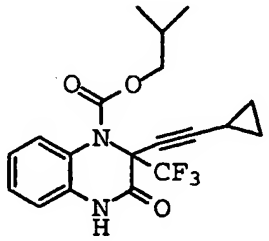
Preparation of 4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A isopropenyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.6(br s, 1H), 7.4(m, 1H), 7.15(m, 2H), 6.85(m, 1H), 4.85(4.87(d, *J* = 2Hz, 1H), 4.78(d, *J* = 2Hz, 1H), 2.05(s, 3H), 1.4(m, 1H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.60(s, 3F). High resolution mass spec: calculated for $C_{18}H_{16}N_2O_3F_3$ $(M+H)^+$: 365.1113; found: 365.1100.

EXAMPLE 29

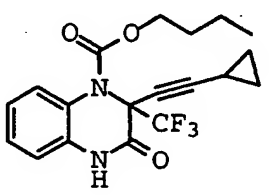
Preparation of 4-(isobutoxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A isobutyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.6(br s, 1H), 7.3(m, 1H), 7.15(m, 1H), 6.85(m, 1H), 4.2(dd, *J* = 7,3Hz, 1H), 3.95(dd, *J* = 7,3Hz, 1H), 2.1(p, *J* = 7Hz, 1H), 1.4(m, 1H), 0.95(d, *J* = 3Hz, 3H), 0.9(d, *J* = 3Hz, 3H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.49(s, 3F). High resolution mass spec: calculated for $C_{19}H_{20}N_2O_3F_3$ $(M+H)^+$: 381.1426; found: 381.1445.

EXAMPLE 30

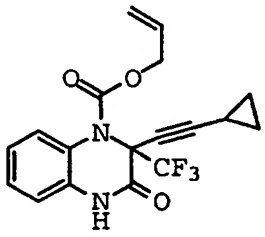
Preparation of 4-(n-butoxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A *n*butyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.65(br s, 1H), 7.3(m, 1H), 7.1(m, 2H), 6.85(m, 1H), 4.4(m, 1H), 4.2(m, 1H), 1.65(m, 2H), 1.45(m, 2H), 1.4(m, 1H), 0.95(t, *J* = 5Hz, 3H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.53(s, 3F). High resolution mass spec: calculated for $C_{19}H_{20}N_2O_3F_3$ $(M+H)^+$: 381.1426; found: 381.1421.

EXAMPLE 31

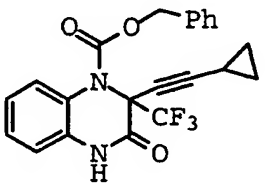
Preparation of 4-(allyloxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A allyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.95(br s, 1H), 7.3(m, 1H), 7.15(m, 2H), 6.85(m, 1H), 6.0(m, 1H), 5.45-5.3(m, 2H), 4.9-4.7(m, 1H), 1.4(m, 1H), 0.85(M, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.57(s, 3F). High resolution mass spec: calculated for $C_{18}H_{16}N_2O_3F_3$ $(M+H)^+$: 365.1113; found: 365.1119.

EXAMPLE 32

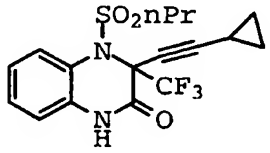
Preparation of 4-(benzyloxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A benzyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.6(br s, 1H), 7.4(m, 5H), 7.3(m, 1H), 7.15(m, 2H), 6.85(, 1H), 5.45-5.2(m, 3H), 1.35(m, 1H), 0.75(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.54(s, 3F). High resolution mass spec: calculated for $C_{22}H_{18}N_2O_3F_3$ $(M+H)^+$: 415.1284; found: 415.1269.

EXAMPLE 33

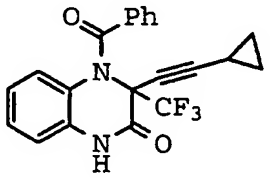
Preparation of 4-(n-propylsulfonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 40, except that in Step A *n*-propylsulfonyl chloride was used instead of isopropylsulfonyl chloride: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.1(br s, 1H), 7.4(m, 1H), 7.2(m, 1H), 7.15(m, 1H), 6.85(M, 1H), 3.65(m, 1H), 3.3(m, 1H), 2.0(m, 2H), 1.45(m, 1H), 1.1(t, J = 7Hz, 3H), 0.9(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.17(s, 3F). High resolution mass spec: calculated for $C_{17}H_{18}N_2O_3F_3S$ $(M+H)^+$: 387.0990; found: 387.0996.

EXAMPLE 34

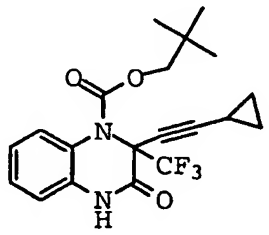
Preparation of 4-(phenylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 37, except that in Step A benzoyl chloride was used instead of isobutyryl chloride: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.2(br s, 1H), 7.55(m, 2H), 7.45(m, 1H), 7.3(m, 2H), 7.)(m, 1H), 6.85(M, 1H), 6.75(m, 1H), 6.9(m, 1H), 1.35(m, 1H), 0.8(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -72.16(s, 3F). High resolution mass spec: calculated for $C_{21}H_{16}N_2O_2F_3$ $(M+H)^+$: 385.1163; found: 385.1184.

EXAMPLE 35

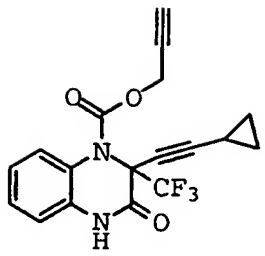
Preparation of 4-(neopentyl-oxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A neopentyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.55(br s, 1H), 7.3(m, 1H), 7.15(m, 2H), 6.85(m, 1H), 4.3(d, J = 11Hz, 1H), 3.8(d, J = 11Hz, 1H), 1.4(m, 1H), 1.0(s, 9H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.42(s, 3F). High resolution mass spec: calculated for $C_{20}H_{22}N_2O_3F_3$ $(M+H)^+$: 395.1582; found: 395.1587.

EXAMPLE 36

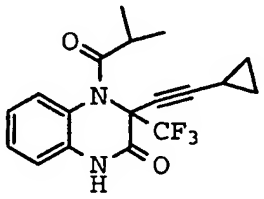
Preparation of 4-(2-propynyl-oxycarbonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A propargyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 9.0(br s, 1H), 7.35(m, 1H), 7.15(m, 2H), 6.9(m, 1H), 4.95(dd, J = 2,13Hz, 1H), 4.85(dd, J = 2,13Hz, 1H), 2.95(t, J = 2Hz, 1H), 1.4(m, 1H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.62(s, 3F). Anal. ($C_{17}H_{13}N_2O_3F_3$) Calcd: C, 59.637; H, 3.626; N, 7.73; F, 15.76; Found: C, 60.18; N, 3.84, N, 7.38; F, 15.66.

EXAMPLE 37

Preparation of 4-(isopropylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



Step A: Preparation of compound of formula **10** wherein G = H, R^2 = cyclopropylacetylene and R^1 = COiPr

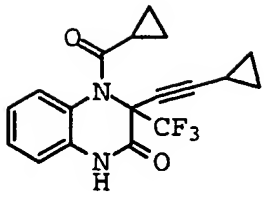
To a solution of protected quinoxalinone of formula **3** as prepared in step C in Example 1 (250 mg, 0.61 mmol) in THF (2.5 mL) at -78°C was added nBuLi (0.53 mL, 0.85 mmol) followed by isobutyryl chloride (0.15 mL, 1.46 mmol) and the resulting reaction mixture was allowed to stir for an hour with warming to room temperature. The reaction mixture is poured onto saturated NH_4cl and extracted with ether (3x50mL)

and the combined ether extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 5% EtOAc-hexanes eluant) provided 189 mg of compound of formula **10**, (293 mg theoretical, 64%). ^1H NMR (300 MHz, $CDCl_3$) δ 7.5(m, 1H), 7.2(m, 2H), 6.9(m, 1H), 5.85(d, *J* = 11Hz, 1H), 5.29d, *J* = 11Hz, 1H), 3.7(m, 2H), 3.15(m, 1H), 1.4(m, 1H), 1.31(d, *J* = 7Hz, 3H), 1.13(d, *J* = 7Hz, 3H), 0.95(m, 2H), 0.85(M, 4H). Mass spec. (NH_3-CI): 481($M+H^+$, 100%).

Step B:
To a solution of the acylated quinoxalinone of formula **10** (189 mg, 0.39 mmol) in CH_2Cl_2 (2 mL) at 0°C was added $BF_3.Et_2O$ (110 µL, 0.87 mmol) and the resulting reaction mixture was allowed to stir at 0°C for 30 minutes and stirred for an additional hour with warming to room temperature.. To the reaction mixture was added MeOH (1 mL) and 15% NaOH (1 mL) and the resulting reaction mixture was allowed to stir at room temperature for 10 minutes. The reaction mixture was poured onto water and extracted with CH_2Cl_2 (3x25 mL) and the combined CH_2Cl_2 extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 25% acetone-hexanes eluant) followed by PTLC (SiO_2, CH_2Cl_2 eluant) provided 10.5 mg of the title compound, (136.5 mg theoretical, 7.7%). ^1H NMR (300 MHz, $CDCl_3$) δ 8.65(br s, 1H), 7.15(m, 2H), 6.95(m, 2H), 3.15(m, 1H), 1.4(m, 1H), 1.28(d, *J* = 7Hz, 3H), 1.11(d, *J* = 7Hz, 3H), 0.8(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -72.78(s, 3F). High resolution mass spec: calculated for $C_{18}H_{18}N_2O_2F_3$ $(M+H)^+$: 351.1320; found: 351. 1299.

EXAMPLE 38

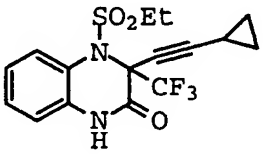
Preparation of 4-(cyclopropylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 37, except that in Step A cyclopropane carbonyl chloride was used instead of isobutyryl chloride: ^1H NMR (300 MHz, $CDCl_3$) δ 8.6(br s, 1H), 7.35(m, 1H), 7.2-7.0(m, 2H), 6.9(m, 1H), 1.95(m, 1H), 1.35(m, 2H), 1.2(m, 1H), 1.0(m, 1H), 0.9(m, 1H), 0.85(m, 4H). High resolution mass spec: calculated for $C_{18}H_{16}N_2O_2F_3$ $(M+H)^+$: 349.1163; found: 349.1153.

EXAMPLE 39

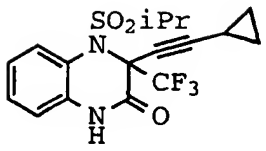
Preparation of 4-(ethylsulfonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 40, except that in Step A ethylsulfonyl chloride was used instead of isopropylsulfonyl chloride: ^1H NMR (300 MHz, $CDCl_3$) δ 8.8(br s, 1H), 7.4(m, 1H), 7.25(m, 1H), 7.15(m, 1H), 6.9(m, 1H), 3.75(p, J = 7Hz, 1H), 3.45(p, J = 7Hz, 1H), 1.5(t, J = 7Hz, 3H), 1.4(m, 1H), 0.9(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.13(s, 3F). High resolution mass spec: calculated for $C_{16}H_{16}N_2O_3F_3S$ $(M+H)^+$: 373.0833; found: 373.0829.

EXAMPLE 40

Preparation of 4-(isopropylsulfonyl)-3-(2-cyclopropylethynyl) -3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



Step A: Preparation of compound of formula 8 wherein G = H, R^2 = cyclopropylacetylene and R^1 = SOOiPr

To a solution of protected quinoxalinone of formula 3 as prepared in step C in Example 1 (250 mg, 0.61 mmol) in THF (2.5 mL) at -78°C was added nBuLi (0.53 mL, 0.85 mmol) followed by isopropylsulfonyl chloride (164 µL, 1.46 mmol) and the reaction mixture was allowed to warm to room temperature and stir for an hour. The reaction mixture was poured onto saturated $NaHCO_3$ and extracted with ether (3x25 mL) and the combined ether extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography (SiO_2, 10% EtOAc-hexanes eluant) provided 51 mg of compound of formula 8, (315 mg theoretical, 16%). ^1H NMR (300 MHz, $CDCl_3$) δ 7.5(m, 1H), 7.35(m, 2H), 7.2(m, 1H), 5.8(d, J = 11Hz, 1H), 5.15(d, J = 11Hz, 1H), 4.25(m 1H), 3.7(m, 2H), 1.65(m, 3H), 1.45(m, 4H), 0.95(m, 5H), 0.01(s, 9H). Mass spec. (NH_3-CI): 534($M+NH_4^+$, 100%).

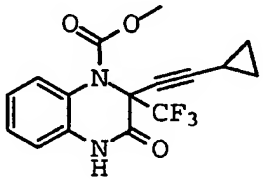
Step B:

To a solution of the sulfonamide-quinoxalinone of formula 8 (51 mg, 0.099 mmol) in CH_2Cl_2 (1 mL) at 0°C was added $BF_3.Et_2O$ (27 µL, 0.22 mmol) and the resulting reaction mixture was allowed to stir at 0°C for 30 minutes, and stirred for an additional 1 hour with warming to room temperature. To the reaction mixture was added MeOH (1 mL) and 15% NaOH (1 mL) and the resulting reaction mixture was allowed to stir at room temperature for 10 minutes. The reaction mixture was poured onto water and extracted with CH_2Cl_2 (3x25 mL) and the combined CH_2Cl_2 extracts were dried over anhydrous Na_2SO_4 and concentrated in vacuo. Chromatography/PTLC (SiO_2, 25% acetone-hexanes eluant) provided 14 mg of the title compound, (38 mg theoretical, 37%). ^1H NMR (300 MHz, $CDCl_3$) δ 8.63(br

s, 1H), 7.4(m, 1H), 7.25(m, 1H), 7.15(m, 1H), 6.85(m, 1H), 4.2(m, 1H), 1.6(d, J = 7Hz, 3H), 1.45(m, 1H), 1.39(d, J = 7Hz, 3H), 0.9(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.05(s, 3F). High resolution mass spec: calculated for $C_{17}H_{18}N_2O_3F_3S$ $(M+H)^+$: 387.0990; found: .387.1002.

EXAMPLE 41

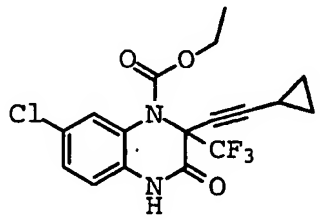
Preparation of 4-(methoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A methyl chloroformate was used instead of ethyl chloroformate: ^1H NMR (300 MHz, $CDCl_3$) δ 8.45(br s, 1H), 7.25(m, 1H), 7.05(m, 2H), 6.85(m, 1H), 8.85(s, #J), 1.4(m, 1H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.65(s, 3F). High resolution mass spec: calculated for $C_{16}H_{14}N_2O_3F_3$ $(M+H)^+$: 339.0956; found: 339.0932.

EXAMPLE 42

Preparation of 6-(chloro)-4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

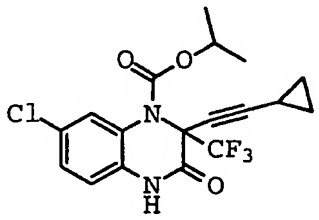


The title compound was prepared in a manner similar to the product of Example 26: ^1H NMR (300 MHz, $CDCl_3$) δ 8.65(br s, 1H), 7.35(m, 1H), 7.1(m, 1H), 6.8(m, 1H), 4.45-4.3(m, 2H), 1.4(t, J = 7Hz, 3H), 1.35(m, 1H), 0.85(m, 4H). ^{19}F NMR (282

MHz, $CDCl_3$) δ -73.54(s, 3F). High resolution mass spec: calculated for $C_{17}H_{13}N_2O_3F_3Cl$ $(M-H)^+$: 385.0566; found: 385.0570.

EXAMPLE 43

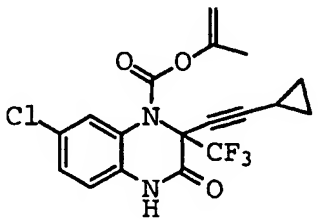
Preparation of 6-(chloro)-4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A isopropyl chloroformate was used instead of ethyl chloroformate: ^1H NMR (300 MHz, $CDCl_3$) δ 8.65(br s, 1H), 7.45(m, 1H), 7.35(m, 1H), 15(m, 1H), 6.8(m, 1H), 5.15(p, J = 7Hz, 1H), 1.4(d, J = 7Hz, 3H), 1.38(d, J = 7Hz, 3H), 1.35(m, 1H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.47(s, 3F). High resolution mass spec: calculated for $C_{18}H_{15}N_2O_3F_3Cl$ $(M-H)^+$: 399.0723; found: 399.0719.

EXAMPLE 44

Preparation of 6-(chloro)-4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

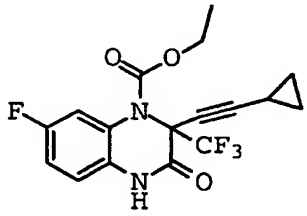


The title compound was prepared in a manner similar to the product of Example 26, except that in Step A isopropenyl

chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.8(br s, 1H), 7.4(m, 1H), 7.15(m, 1H), 6.8(m, 1H), 4.9(m, 1H), 4.8(m, 1H), 2.05(s, 3H), 1.4(m, 1H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.60(s, 3F). High resolution mass spec: calculated for $C_{18}H_{13}N_2O_3F_3Cl$ $(M-H)^+$: 397.0566; found: 397.0563.

EXAMPLE 45

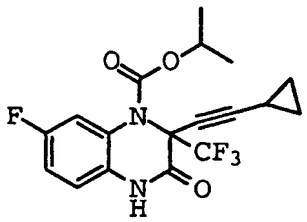
Preparation of 6-(fluoro)-4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.7(br s, 1H), 7.1(m, 1H), 6.8(m, 2H), 4.4(m, 2H), 1.42(t, J = 7Hz, 3H), 1.4(m, 1H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.54(s, 3F), -117.47(s, 1F). High resolution mass spec: calculated for $C_{17}H_{13}N_2O_3F_4$ $(M-H)^+$: 369.0862; found: 369.0852.

EXAMPLE 46

Preparation of 6-(fluoro)-4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

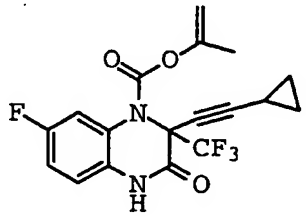


The title compound was prepared in a manner similar to the product of Example 26, except that in Step A isopropyl

chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 8.85(br s, 1H), 7.15(m, 1H), 6.8(m, 2H), 5.15(p, *J* = 7Hz, 1H), 1.45(d, *J* = 7Hz, 3H), 1.42(d, *J* = 7Hz, 3H), 1.4(m, 1H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.45(s, 3F), -117.63(s, 1F). High resolution mass spec: calculated for $C_{18}H_{15}N_2O_3F_4$ $(M-H)^+$: 385.1018; found: 383.1045.

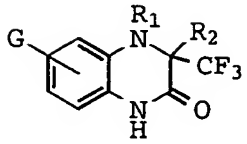
EXAMPLE 47

Preparation of 6-(fluoro)-4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.



The title compound was prepared in a manner similar to the product of Example 26, except that in Step A isopropenyl chloroformate was used instead of ethyl chloroformate: ^{1}H NMR (300 MHz, $CDCl_3$) δ 9.0(br s, 1H), 7.2(m, 1H), 6.85(m, 2H), 4.9(m, 1H), 4.8(m, 1H), 2.05(s, 3H), 1.4(m, 1H), 0.85(m, 4H). ^{19}F NMR (282 MHz, $CDCl_3$) δ -73.61(s, 3F), -117.10(s, 1F). High resolution mass spec: calculated for $C_{18}H_{15}N_2O_3F_4$ $(M+H)^+$: 383.1018; found: 383.1018.

Table 1



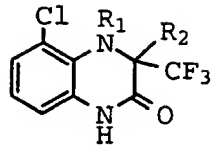
Ex. #	G	R^1	R^2	mass spec
1	H	CH_2cycPr	C≡C-cycPr	280.0828
2	H	Me	C≡C-cycPr	295.1073
3	H	H	nButyl	273.1211
4	H	Me	nButyl	287.1363
5	H	H	C≡C-cycPr	335.1371
6	H	H	allyl	257.0898
7	H	allyl	C≡C-cycPr	321.1199
8	H	benzyl	C≡C-cycPr	371.1365
9	H	CH_2cycPr	allyl	311.1353
10	H	propargyl	C≡C-cycPr	319.1057
11	H	CH_2CH_2cycPr	C≡C-cycPr	349.1555
12	H	isopropyl	C≡C-cycPr	323.1365
13	6-F	allyl	nButyl	330.1332
14	6-F	allyl	C≡C-cycPr	339.1143
15	6-F	CH_2cycPr	C≡C-cycPr	353.1265
16	6-F	CH_2cycPr	nButyl	344.1520
17	6-Cl	CH_2cycPr	C≡C-cycPr	369.0995
18	6-Cl	isobutyl	C≡C-cycPr	385.1298
19	6-Cl	allyl	C≡C-cycPr	355.0839
20	6-Cl	CH_2cycPr	phenethyl	408.1198
21	6-Cl	allyl	phenethyl	395.1111
22	6-OMe	CH_2cycPr	C≡C-cycPr	365.1463
23	6-OMe	allyl	C≡C-cycPr	351.1212
24	H	CH_2cycPr	C≡C-Me	309.1224
25	H	allyl	C≡C-Me	295.1057
26	H	COOEt	C≡C-cycPr	353.1093

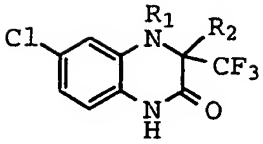
27	H	COOiPr	C≡C-cycPr	367.1286
28	H	$COOC(CH_2)Me$	C≡C-cycPr	365.1011
29	H	COOiBu	C≡C-cycPr	381.1445
30	H	COOnBu	C≡C-cycPr	381.1422
31	H	$COOCH_2CHCH_2$	C≡C-cycPr	365.1120
32	H	COOBn	C≡C-cycPr	415.1285
33	H	SO_2nPr	C≡C-cycPr	387.0997
34	H	COPh	C≡C-cycPr	385.1184
35	H	$COOCH_2iBu$	C≡C-cycPr	395.1288
36	H	$COOCH_2CCCH_3$	C≡C-cycPr	363.0950
37	H	COiPr	C≡C-cycPr	351.1299
38	H	COcycPr	C≡C-cycPr	349.1154
39	H	SO_2Et	C≡C-cycPr	373.0829
40	H	SO_2iPr	C≡C-cycPr	387.1002
41	H	$COOCH_3$	C≡C-cycPr	339.0932
42	6-Cl	COOEt	C≡C-cycPr	385.0570
43	6-Cl	COOiPr	C≡C-cycPr	399.0719
44	6-Cl	$COOC(CH_2)CH_3$	C≡C-cycPr	397.0563
45	6-F	COOEt	C≡C-cycPr	369.0852
46	6-F	COOiPr	C≡C-cycPr	383.1045
47	6-F	$COOC(CH_2)CH_3$	C≡C-cycPr	383.1019

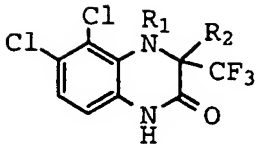
*Unless otherwise noted, stereochemistry is (+/-).

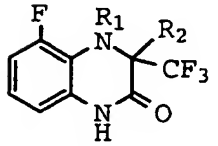
Tables 2 and 3 show representative compounds of the present invention. Each formula shown at the start of Table 2 and 3 is intended to be paired with each entry in the table which follows.

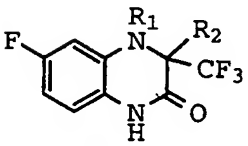
Table 2

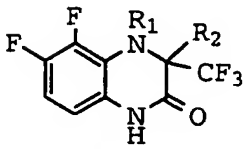

a

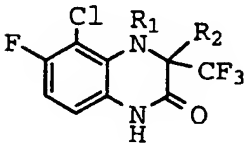

b

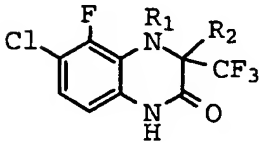

c

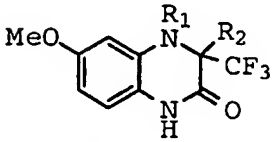

d

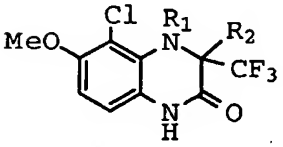

e

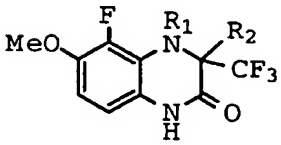

f

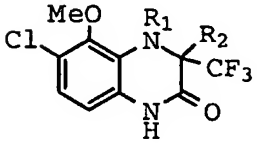

g

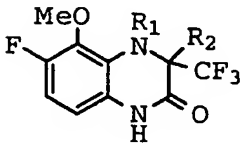

h

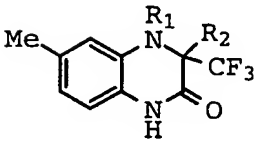

i

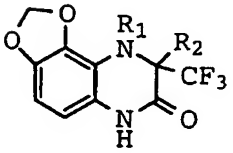

j

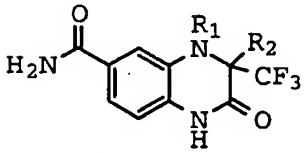

k


l


m


n


q


r

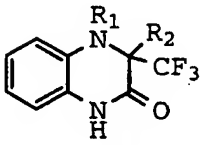

s

Table 2 cont

Ex. #	R^1	R^2	Ex. #	R^1	R^2
201	$-CH_3$	n-butyl	228	$-CH_3$	-CH=CH-3-Fur
202	$-CH_3$	benzyl	229	$-CH_3$	-CH=CH-2-Imid
203	$-CH_3$	phenethyl	230	$-CH_3$	-CH=CH-5-Imid
204	$-CH_3$	$-CH_2CH_2$-cycPr	231	$-CH_3$	$-CH_2C\equiv C-CH_3$
205	$-CH_3$	$-C\equiv C-CH_3$	232	$-CH_3$	$-CH_2C\equiv C-CF_3$
206	$-CH_3$	$-C\equiv C-CF_3$	233	$-CH_3$	$-CH_2C\equiv C$-Et
207	$-CH_3$	$-C\equiv C$-Et	234	$-CH_3$	$-CH_2C\equiv C$-iPr
208	$-CH_3$	$-C\equiv C$-iPr	235	$-CH_3$	$-CH_2C\equiv C$-cycPr
209	$-CH_3$	$-C\equiv C$-cycPr	236	$-CH_3$	$-CH_2C\equiv C-CH=CH_2$
210	$-CH_3$	$-C\equiv C$-1-(Me)cycPr	237	$-CH_3$	$-CH_2C\equiv C$-2-Fur
211	$-CH_3$	$-C\equiv C-CH=CH_2$	238	$-CH_3$	$-CH_2C\equiv C$-3-Fur
212	$-CH_3$	$-C\equiv C-C(=CH_2)CH_3$	239	$-CH_3$	$-CH_2C\equiv C$-2-Imid
213	$-CH_3$	$-C\equiv C$-2-pyridyl	240	$-CH_3$	$-CH_2C\equiv C$-5-Imid
x14	$-CH_3$	$-C\equiv C$-3-pyridyl	241	$-CH_3$	$-CH_2CH=CH_2$
215	$-CH_3$	$-C\equiv C$-2-Fur	242	$-CH_3$	$-CH_2CH=CH-CH_3$
216	$-CH_3$	$-C\equiv C$-3-Fur	243	$-CH_3$	$-CH_2CH=CH-CF_3$
217	$-CH_3$	$-C\equiv C$-2-Imid	244	$-CH_3$	$-CH_2CH=CH$-Et
218	$-CH_3$	$-C\equiv C$-5-Imid	245	$-CH_3$	$-CH_2CH=CH$-iPr
219	$-CH_3$	$-CH=CH-CH_3$	246	$-CH_3$	$-CH_2CH=CH$-cycPr
220	$-CH_3$	$-CH=CH-CF_3$	247	$-CH_3$	$-CH_2CH=CHCH=CH_2$
221	$-CH_3$	-CH=CH-Et	248	$-CH_3$	$-CH_2CH=C(CH_3)_2$
222	$-CH_3$	-CH=CH-iPr	249	$-CH_3$	$-CH_2CH=CH$-2-Fur
223	$-CH_3$	-CH=CH-cycPr	250	$-CH_3$	$-CH_2CH=CH$-3-Fur
224	$-CH_3$	$-CH=CH-CH=CH_2$	251	$-CH_3$	$-CH_2CH=CH$-2-Imid
225	$-CH_3$	-CH=CH-2-pyridyl	252	$-CH_3$	$-CH_2CH=CH$-5-Imid
226	$-CH_3$	-CH=CH-3-pyridyl	253	$-CH_3$	$-CH=CHCH_2$-cycPr
227	$-CH_3$	-CH=CH-2-Fur	254	$-CH_3$	$-CH=CHCH_2$-2-Fur

* 2-Fur stands for furan-2-yl
* 3-Fur stands for furan-3-yl
* 2-Imid stands for imidazol-2-yl
* 5-Imid stands for imidazol-5-yl

Table 2 cont.

Ex. #	R^1	R^2	Ex. #	R^1	R^2
301	$-CH(CH_3)_2$	n-butyl	328	$-CH(CH_3)_2$	-CH=CH-3-Fur
302	$-CH(CH_3)_2$	benzyl	329	$-CH(CH_3)_2$	-CH=CH-2-Imid
303	$-CH(CH_3)_2$	phenethyl	330	$-CH(CH_3)_2$	-CH=CH-5-Imid
304	$-CH(CH_3)_2$	$-CH_2CH_2$-cycPr	331	$-CH(CH_3)_2$	$-CH_2C\equiv C-CH_3$
305	$-CH(CH_3)_2$	$-C\equiv C-CH_3$	332	$-CH(CH_3)_2$	$-CH_2C\equiv C-CF_3$
306	$-CH(CH_3)_2$	$-C\equiv C-CF_3$	333	$-CH(CH_3)_2$	$-CH_2C\equiv C$-Et
307	$-CH(CH_3)_2$	$-C\equiv C$-Et	334	$-CH(CH_3)_2$	$-CH_2C\equiv C$-iPr
308	$-CH(CH_3)_2$	$-C\equiv C$-iPr	335	$-CH(CH_3)_2$	$-CH_2C\equiv C$-cycPr
309	$-CH(CH_3)_2$	$-C\equiv C$-cycPr	336	$-CH(CH_3)_2$	$-CH_2C\equiv C-CH=CH_2$
310	$-CH(CH_3)_2$	$-C\equiv C$-1-(Me)cycPr	337	$-CH(CH_3)_2$	$-CH_2C\equiv C$-2-Fur
311	$-CH(CH_3)_2$	$-C\equiv C-CH=CH_2$	338	$-CH(CH_3)_2$	$-CH_2C\equiv C$-3-Fur
312	$-CH(CH_3)_2$	$-C\equiv C-C(=CH_2)CH_3$	339	$-CH(CH_3)_2$	$-CH_2C\equiv C$-2-Imid
313	$-CH(CH_3)_2$	$-C\equiv C$-2-pyridyl	340	$-CH(CH_3)_2$	$-CH_2C\equiv C$-5-Imid
314	$-CH(CH_3)_2$	$-C\equiv C$-3-pyridyl	341	$-CH(CH_3)_2$	$-CH_2CH=CH_2$
315	$-CH(CH_3)_2$	$-C\equiv C$-2-Fur	342	$-CH(CH_3)_2$	$-CH_2CH=CH-CH_3$
316	$-CH(CH_3)_2$	$-C\equiv C$-3-Fur	343	$-CH(CH_3)_2$	$-CH_2CH=CH-CF_3$
317	$-CH(CH_3)_2$	$-C\equiv C$-2-Imid	344	$-CH(CH_3)_2$	$-CH_2CH=CH$-Et
318	$-CH(CH_3)_2$	$-C\equiv C$-5-Imid	345	$-CH(CH_3)_2$	$-CH_2CH=CH$-iPr
319	$-CH(CH_3)_2$	$-CH=CH-CH_3$	346	$-CH(CH_3)_2$	$-CH_2CH=CH$-cycPr
320	$-CH(CH_3)_2$	$-CH=CH-CF_3$	347	$-CH(CH_3)_2$	$-CH_2CH=CHCH=CH_2$
321	$-CH(CH_3)_2$	-CH=CH-Et	348	$-CH(CH_3)_2$	$-CH_2CH=C(CH_3)_2$
322	$-CH(CH_3)_2$	-CH=CH-iPr	349	$-CH(CH_3)_2$	$-CH_2CH=CH$-2-Fur
323	$-CH(CH_3)_2$	-CH=CH-cycPr	350	$-CH(CH_3)_2$	$-CH_2CH=CH$-3-Fur
324	$-CH(CH_3)_2$	$-CH=CH-CH=CH_2$	351	$-CH(CH_3)_2$	$-CH_2CH=CH$-2-Imid
325	$-CH(CH_3)_2$	-CH=CH-2-pyridyl	352	$-CH(CH_3)_2$	$-CH_2CH=CH$-5-Imid
326	$-CH(CH_3)_2$	-CH=CH-3-pyridyl	353	$-CH(CH_3)_2$	$-CH=CHCH_2$-cycPr
327	$-CH(CH_3)_2$	-CH=CH-2-Fur	354	$-CH(CH_3)_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
401	$-CH_2CH(CH_3)_2$	n-butyl	428	$-CH_2CH(CH_3)_2$	-CH=CH-3-Fur
402	$-CH_2CH(CH_3)_2$	benzyl	429	$-CH_2CH(CH_3)_2$	-CH=CH-2-Imid
403	$-CH_2CH(CH_3)_2$	phenethyl	430	$-CH_2CH(CH_3)_2$	-CH=CH-5-Imid
404	$-CH_2CH(CH_3)_2$	$-CH_2CH_2$-cycPr	431	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CH_3$
405	$-CH_2CH(CH_3)_2$	$-C\equiv C-CH_3$	432	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CF_3$
406	$-CH_2CH(CH_3)_2$	$-C\equiv C-CF_3$	433	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-Et
407	$-CH_2CH(CH_3)_2$	-C≡C-Et	434	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-iPr
408	$-CH_2CH(CH_3)_2$	-C≡C-iPr	435	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-cycPr
409	$-CH_2CH(CH_3)_2$	-C≡C-cycPr	436	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CH=CH_2$
410	$-CH_2CH(CH_3)_2$	-C≡C-1-(Me)cycPr	437	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Fur
411	$-CH_2CH(CH_3)_2$	$-C\equiv C-CH=CH_2$	438	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-3-Fur
412	$-CH_2CH(CH_3)_2$	$-C\equiv C-C(=CH_2)CH_3$	439	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Imid
413	$-CH_2CH(CH_3)_2$	-C≡C-2-pyridyl	440	$-CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-5-Imid
414	$-CH_2CH(CH_3)_2$	-C≡C-3-pyridyl	441	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH_2$
415	$-CH_2CH(CH_3)_2$	-C≡C-2-Fur	442	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH-CH_3$
416	$-CH_2CH(CH_3)_2$	-C≡C-3-Fur	443	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH-CF_3$
417	$-CH_2CH(CH_3)_2$	-C≡C-2-Imid	444	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH$-Et
418	$-CH_2CH(CH_3)_2$	-C≡C-5-Imid	445	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH$-iPr
419	$-CH_2CH(CH_3)_2$	$-CH=CH-CH_3$	446	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH$-cycPr
420	$-CH_2CH(CH_3)_2$	$-CH=CH-CF_3$	447	$-CH_2CH(CH_3)_2$	$-CH_2CH=CHCH=CH_2$
421	$-CH_2CH(CH_3)_2$	-CH=CH-Et	448	$-CH_2CH(CH_3)_2$	$-CH_2CH=C(CH_3)_2$
422	$-CH_2CH(CH_3)_2$	-CH=CH-iPr	449	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Fur
423	$-CH_2CH(CH_3)_2$	-CH=CH-cycPr	450	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH$-3-Fur
424	$-CH_2CH(CH_3)_2$	$-CH=CH-CH=CH_2$	451	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Imid
425	$-CH_2CH(CH_3)_2$	-CH=CH-2-pyridyl	452	$-CH_2CH(CH_3)_2$	$-CH_2CH=CH$-5-Imid
426	$-CH_2CH(CH_3)_2$	-CH=CH-3-pyridyl	453	$-CH_2CH(CH_3)_2$	$-CH=CHCH_2$-cycPr
427	$-CH_2CH(CH_3)_2$	-CH=CH-2-Fur	454	$-CH_2CH(CH_3)_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
501	$-CH_2CH_2CH(CH_3)_2$	n-butyl	528	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-3-Fur
502	$-CH_2CH_2CH(CH_3)_2$	benzyl	529	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-2-Imid
503	$-CH_2CH_2CH(CH_3)_2$	phenethyl	530	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-5-Imid
504	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH_2$-cycPr	531	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CH_3$
505	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C-CH_3$	532	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CF_3$
506	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C-CF_3$	533	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-Et
507	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-Et	534	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-iPr
508	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-iPr	535	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-cycPr
509	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-cycPr	536	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CH=CH_2$
510	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-1-(Me)cycPr	537	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Fur
511	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C-CH=CH_2$	538	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-3-Fur
512	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C-C(=CH_2)CH_3$	539	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Imid
513	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-2-pyridyl	540	$-CH_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-5-Imid
514	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-3-pyridyl	541	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH_2$
515	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-2-Fur	542	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH-CH_3$
516	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-3-Fur	543	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH-CF_3$
517	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-2-Imid	544	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-Et
518	$-CH_2CH_2CH(CH_3)_2$	$-C\equiv C$-5-Imid	545	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-iPr
519	$-CH_2CH_2CH(CH_3)_2$	$-CH=CH-CH_3$	546	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-cycPr
520	$-CH_2CH_2CH(CH_3)_2$	$-CH=CH-CF_3$	547	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CHCH=CH_2$
521	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-Et	548	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=C(CH_3)_2$
522	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-iPr	549	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Fur
523	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-cycPr	550	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-3-Fur
524	$-CH_2CH_2CH(CH_3)_2$	$-CH=CH-CH=CH_2$	551	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Imid
525	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-2-pyridyl	552	$-CH_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-5-Imid
526	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-3-pyridyl	553	$-CH_2CH_2CH(CH_3)_2$	$-CH=CHCH_2$-cycPr
527	$-CH_2CH_2CH(CH_3)_2$	-CH=CH-2-Fur	554	$-CH_2CH_2CH(CH_3)_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
601	$-CH_2CH_2C(CH_3)_3$	n-butyl	628	$-CH_2CH_2C(CH_3)_3$	-CH=CH-3-Fur
602	$-CH_2CH_2C(CH_3)_3$	benzyl	629	$-CH_2CH_2C(CH_3)_3$	-CH=CH-2-Imid
603	$-CH_2CH_2C(CH_3)_3$	phenethyl	630	$-CH_2CH_2C(CH_3)_3$	-CH=CH-5-Imid
604	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH_2$-cycPr	631	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C-CH_3$
605	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C-CH_3$	632	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C-CF_3$
606	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C-CF_3$	633	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C$-Et
607	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-Et	634	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C$-iPr
608	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-iPr	635	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C$-cycPr
609	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-cycPr	636	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C-CH=CH_2$
610	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-1-(Me)cycPr	637	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C$-2-Fur
611	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C-CH=CH_2$	638	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C$-3-Fur
612	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C-C(=CH_2)CH_3$	639	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C$-2-Imid
613	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-2-pyridyl	640	$-CH_2CH_2C(CH_3)_3$	$-CH_2C\equiv C$-5-Imid
614	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-3-pyridyl	641	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH_2$
615	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-2-Fur	642	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH-CH_3$
616	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-3-Fur	643	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH-CF_3$
617	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-2-Imid	644	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH$-Et
618	$-CH_2CH_2C(CH_3)_3$	$-C\equiv C$-5-Imid	645	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH$-iPr
619	$-CH_2CH_2C(CH_3)_3$	$-CH=CH-CH_3$	646	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH$-cycPr
620	$-CH_2CH_2C(CH_3)_3$	$-CH=CH-CF_3$	647	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CHCH=CH_2$
621	$-CH_2CH_2C(CH_3)_3$	-CH=CH-Et	648	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=C(CH_3)_2$
622	$-CH_2CH_2C(CH_3)_3$	-CH=CH-iPr	649	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH$-2-Fur
623	$-CH_2CH_2C(CH_3)_3$	-CH=CH-cycPr	650	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH$-3-Fur
624	$-CH_2CH_2C(CH_3)_3$	$-CH=CH-CH=CH_2$	651	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH$-2-Imid
625	$-CH_2CH_2C(CH_3)_3$	-CH=CH-2-pyridyl	652	$-CH_2CH_2C(CH_3)_3$	$-CH_2CH=CH$-5-Imid
626	$-CH_2CH_2C(CH_3)_3$	-CH=CH-3-pyridyl	653	$-CH_2CH_2C(CH_3)_3$	$-CH=CHCH_2$-cycPr
627	$-CH_2CH_2C(CH_3)_3$	-CH=CH-2-Fur	654	$-CH_2CH_2C(CH_3)_3$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
701	-CH_2cycPr	n-butyl	728	-CH_2cycPr	-CH=CH-3-Fur
702	-CH_2cycPr	benzyl	729	-CH_2cycPr	-CH=CH-2-Imid
703	-CH_2cycPr	phenethyl	730	-CH_2cycPr	-CH=CH-5-Imid
704	-CH_2cycPr	-CH_2CH_2-cycPr	731	-CH_2cycPr	-$CH_2C{\equiv}C$-CH_3
705	-CH_2cycPr	-C≡C-CH_3	732	-CH_2cycPr	-$CH_2C{\equiv}C$-CF_3
706	-CH_2cycPr	-C≡C-CF_3	733	-CH_2cycPr	-$CH_2C{\equiv}C$-Et
707	-CH_2cycPr	-C≡C-Et	734	-CH_2cycPr	-$CH_2C{\equiv}C$-iPr
708	-CH_2cycPr	-C≡C-iPr	735	-CH_2cycPr	-$CH_2C{\equiv}C$-cycPr
709	-CH_2cycPr	-C≡C-cycPr	736	-CH_2cycPr	-$CH_2C{\equiv}C$-$CH{=}CH_2$
710	-CH_2cycPr	-C≡C-1-(Me)cycPr	737	-CH_2cycPr	-$CH_2C{\equiv}C$-2-Fur
711	-CH_2cycPr	-C≡C-$CH{=}CH_2$	738	-CH_2cycPr	-$CH_2C{\equiv}C$-3-Fur
712	-CH_2cycPr	-C≡C-C(=CH_2)CH_3	739	-CH_2cycPr	-$CH_2C{\equiv}C$-2-Imid
713	-CH_2cycPr	-C≡C-2-pyridyl	740	-CH_2cycPr	-$CH_2C{\equiv}C$-5-Imid
714	-CH_2cycPr	-C≡C-3-pyridyl	741	-CH_2cycPr	-$CH_2CH{=}CH_2$
715	-CH_2cycPr	-C≡C-2-Fur	742	-CH_2cycPr	-$CH_2CH{=}CH$-CH_3
716	-CH_2cycPr	-C≡C-3-Fur	743	-CH_2cycPr	-$CH_2CH{=}CH$-CF_3
717	-CH_2cycPr	-C≡C-2-Imid	744	-CH_2cycPr	-$CH_2CH{=}CH$-Et
718	-CH_2cycPr	-C≡C-5-Imid	745	-CH_2cycPr	-$CH_2CH{=}CH$-iPr
719	-CH_2cycPr	-CH=CH-CH_3	746	-CH_2cycPr	-$CH_2CH{=}CH$-cycPr
720	-CH_2cycPr	-CH=CH-CF_3	747	-CH_2cycPr	-$CH_2CH{=}CHCH{=}CH_2$
721	-CH_2cycPr	-CH=CH-Et	748	-CH_2cycPr	-$CH_2CH{=}C(CH_3)_2$
722	-CH_2cycPr	-CH=CH-iPr	749	-CH_2cycPr	-$CH_2CH{=}CH$-2-Fur
723	-CH_2cycPr	-CH=CH-cycPr	750	-CH_2cycPr	-$CH_2CH{=}CH$-3-Fur
724	-CH_2cycPr	-CH=CH-$CH{=}CH_2$	751	-CH_2cycPr	-$CH_2CH{=}CH$-2-Imid
725	-CH_2cycPr	-CH=CH-2-pyridyl	752	-CH_2cycPr	-$CH_2CH{=}CH$-5-Imid
726	-CH_2cycPr	-CH=CH-3-pyridyl	753	-CH_2cycPr	-$CH{=}CHCH_2$-cycPr
727	-CH_2cycPr	-CH=CH-2-Fur	754	-CH_2cycPr	-$CH{=}CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
801	$-CH_2CH_2$cycPr	n-butyl	828	$-CH_2CH_2$cycPr	-CH=CH-3-Fur
802	$-CH_2CH_2$cycPr	benzyl	829	$-CH_2CH_2$cycPr	-CH=CH-2-Imid
803	$-CH_2CH_2$cycPr	phenethyl	830	$-CH_2CH_2$cycPr	-CH=CH-5-Imid
804	$-CH_2CH_2$cycPr	$-CH_2CH_2$-cycPr	831	$-CH_2CH_2$cycPr	$-CH_2C\equiv C-CH_3$
805	$-CH_2CH_2$cycPr	$-C\equiv C-CH_3$	832	$-CH_2CH_2$cycPr	$-CH_2C\equiv C-CF_3$
806	$-CH_2CH_2$cycPr	$-C\equiv C-CF_3$	833	$-CH_2CH_2$cycPr	$-CH_2C\equiv C$-Et
807	$-CH_2CH_2$cycPr	$-C\equiv C$-Et	834	$-CH_2CH_2$cycPr	$-CH_2C\equiv C$-iPr
808	$-CH_2CH_2$cycPr	$-C\equiv C$-iPr	835	$-CH_2CH_2$cycPr	$-CH_2C\equiv C$-cycPr
809	$-CH_2CH_2$cycPr	$-C\equiv C$-cycPr	836	$-CH_2CH_2$cycPr	$-CH_2C\equiv C-CH=CH_2$
810	$-CH_2CH_2$cycPr	$-C\equiv C$-1-(Me)cycPr	837	$-CH_2CH_2$cycPr	$-CH_2C\equiv C$-2-Fur
811	$-CH_2CH_2$cycPr	$-C\equiv C-CH=CH_2$	838	$-CH_2CH_2$cycPr	$-CH_2C\equiv C$-3-Fur
812	$-CH_2CH_2$cycPr	$-C\equiv C-C(=CH_2)CH_3$	839	$-CH_2CH_2$cycPr	$-CH_2C\equiv C$-2-Imid
813	$-CH_2CH_2$cycPr	$-C\equiv C$-2-pyridyl	840	$-CH_2CH_2$cycPr	$-CH_2C\equiv C$-5-Imid
814	$-CH_2CH_2$cycPr	$-C\equiv C$-3-pyridyl	841	$-CH_2CH_2$cycPr	$-CH_2CH=CH_2$
815	$-CH_2CH_2$cycPr	$-C\equiv C$-2-Fur	842	$-CH_2CH_2$cycPr	$-CH_2CH=CH-CH_3$
816	$-CH_2CH_2$cycPr	$-C\equiv C$-3-Fur	843	$-CH_2CH_2$cycPr	$-CH_2CH=CH-CF_3$
817	$-CH_2CH_2$cycPr	$-C\equiv C$-2-Imid	844	$-CH_2CH_2$cycPr	$-CH_2CH=CH$-Et
818	$-CH_2CH_2$cycPr	$-C\equiv C$-5-Imid	845	$-CH_2CH_2$cycPr	$-CH_2CH=CH$-iPr
819	$-CH_2CH_2$cycPr	$-CH=CH-CH_3$	846	$-CH_2CH_2$cycPr	$-CH_2CH=CH$-cycPr
820	$-CH_2CH_2$cycPr	$-CH=CH-CF_3$	847	$-CH_2CH_2$cycPr	$-CH_2CH=CHCH=CH_2$
821	$-CH_2CH_2$cycPr	-CH=CH-Et	848	$-CH_2CH_2$cycPr	$-CH_2CH=C(CH_3)_2$
822	$-CH_2CH_2$cycPr	-CH=CH-iPr	849	$-CH_2CH_2$cycPr	$-CH_2CH=CH$-2-Fur
823	$-CH_2CH_2$cycPr	-CH=CH-cycPr	850	$-CH_2CH_2$cycPr	$-CH_2CH=CH$-3-Fur
824	$-CH_2CH_2$cycPr	$-CH=CH-CH=CH_2$	851	$-CH_2CH_2$cycPr	$-CH_2CH=CH$-2-Imid
825	$-CH_2CH_2$cycPr	-CH=CH-2-pyridyl	852	$-CH_2CH_2$cycPr	$-CH_2CH=CH$-5-Imid
826	$-CH_2CH_2$cycPr	-CH=CH-3-pyridyl	853	$-CH_2CH_2$cycPr	$-CH=CHCH_2$-cycPr
827	$-CH_2CH_2$cycPr	-CH=CH-2-Fur	854	$-CH_2CH_2$cycPr	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
901	$-CH_2CH=CH_2$	n-butyl	928	$-CH_2CH=CH_2$	-CH=CH-3-Fur
902	$-CH_2CH=CH_2$	benzyl	929	$-CH_2CH=CH_2$	-CH=CH-2-Imid
903	$-CH_2CH=CH_2$	phenethyl	930	$-CH_2CH=CH_2$	-CH=CH-5-Imid
904	$-CH_2CH=CH_2$	$-CH_2CH_2$-cycPr	931	$-CH_2CH=CH_2$	$-CH_2C\equiv C-CH_3$
905	$-CH_2CH=CH_2$	$-C\equiv C-CH_3$	932	$-CH_2CH=CH_2$	$-CH_2C\equiv C-CF_3$
906	$-CH_2CH=CH_2$	$-C\equiv C-CF_3$	933	$-CH_2CH=CH_2$	$-CH_2C\equiv C$-Et
907	$-CH_2CH=CH_2$	$-C\equiv C$-Et	934	$-CH_2CH=CH_2$	$-CH_2C\equiv C$-iPr
908	$-CH_2CH=CH_2$	$-C\equiv C$-iPr	935	$-CH_2CH=CH_2$	$-CH_2C\equiv C$-cycPr
909	$-CH_2CH=CH_2$	$-C\equiv C$-cycPr	936	$-CH_2CH=CH_2$	$-CH_2C\equiv C-CH=CH_2$
910	$-CH_2CH=CH_2$	$-C\equiv C$-1-(Me)cycPr	937	$-CH_2CH=CH_2$	$-CH_2C\equiv C$-2-Fur
911	$-CH_2CH=CH_2$	$-C\equiv C-CH=CH_2$	938	$-CH_2CH=CH_2$	$-CH_2C\equiv C$-3-Fur
912	$-CH_2CH=CH_2$	$-C\equiv C-C(=CH_2)CH_3$	939	$-CH_2CH=CH_2$	$-CH_2C\equiv C$-2-Imid
913	$-CH_2CH=CH_2$	$-C\equiv C$-2-pyridyl	940	$-CH_2CH=CH_2$	$-CH_2C\equiv C$-5-Imid
914	$-CH_2CH=CH_2$	$-C\equiv C$-3-pyridyl	941	$-CH_2CH=CH_2$	$-CH_2CH=CH_2$
915	$-CH_2CH=CH_2$	$-C\equiv C$-2-Fur	942	$-CH_2CH=CH_2$	$-CH_2CH=CH-CH_3$
916	$-CH_2CH=CH_2$	$-C\equiv C$-3-Fur	943	$-CH_2CH=CH_2$	$-CH_2CH=CH-CF_3$
917	$-CH_2CH=CH_2$	$-C\equiv C$-2-Imid	944	$-CH_2CH=CH_2$	$-CH_2CH=CH$-Et
918	$-CH_2CH=CH_2$	$-C\equiv C$-5-Imid	945	$-CH_2CH=CH_2$	$-CH_2CH=CH$-iPr
919	$-CH_2CH=CH_2$	$-CH=CH-CH_3$	946	$-CH_2CH=CH_2$	$-CH_2CH=CH$-cycPr
920	$-CH_2CH=CH_2$	$-CH=CH-CF_3$	947	$-CH_2CH=CH_2$	$-CH_2CH=CHCH=CH_2$
921	$-CH_2CH=CH_2$	-CH=CH-Et	948	$-CH_2CH=CH_2$	$-CH_2CH=C(CH_3)_2$
922	$-CH_2CH=CH_2$	-CH=CH-iPr	949	$-CH_2CH=CH_2$	$-CH_2CH=CH$-2-Fur
923	$-CH_2CH=CH_2$	-CH=CH-cycPr	950	$-CH_2CH=CH_2$	$-CH_2CH=CH$-3-Fur
924	$-CH_2CH=CH_2$	$-CH=CH-CH=CH_2$	951	$-CH_2CH=CH_2$	$-CH_2CH=CH$-2-Imid
925	$-CH_2CH=CH_2$	-CH=CH-2-pyridyl	952	$-CH_2CH=CH_2$	$-CH_2CH=CH$-5-Imid
926	$-CH_2CH=CH_2$	-CH=CH-3-pyridyl	953	$-CH_2CH=CH_2$	$-CH=CHCH_2$-cycPr
927	$-CH_2CH=CH_2$	-CH=CH-2-Fur	954	$-CH_2CH=CH_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1001	$-C(=CH_2)CH_3$	n-butyl	1028	$-C(=CH_2)CH_3$	-CH=CH-3-Fur
1002	$-C(=CH_2)CH_3$	benzyl	1029	$-C(=CH_2)CH_3$	-CH=CH-2-Imid
1003	$-C(=CH_2)CH_3$	phenethyl	1030	$-C(=CH_2)CH_3$	-CH=CH-5-Imid
1004	$-C(=CH_2)CH_3$	$-CH_2CH_2$-cycPr	1031	$-C(=CH_2)CH_3$	$-CH_2C\equiv C-CH_3$
1005	$-C(=CH_2)CH_3$	$-C\equiv C-CH_3$	1032	$-C(=CH_2)CH_3$	$-CH_2C\equiv C-CF_3$
1006	$-C(=CH_2)CH_3$	$-C\equiv C-CF_3$	1033	$-C(=CH_2)CH_3$	$-CH_2C\equiv C$-Et
1007	$-C(=CH_2)CH_3$	$-C\equiv C$-Et	1034	$-C(=CH_2)CH_3$	$-CH_2C\equiv C$-iPr
1008	$-C(=CH_2)CH_3$	$-C\equiv C$-iPr	1035	$-C(=CH_2)CH_3$	$-CH_2C\equiv C$-cycPr
1009	$-C(=CH_2)CH_3$	$-C\equiv C$-cycPr	1036	$-C(=CH_2)CH_3$	$-CH_2C\equiv C-CH=CH_2$
1010	$-C(=CH_2)CH_3$	$-C\equiv C$-1-(Me)cycPr	1037	$-C(=CH_2)CH_3$	$-CH_2C\equiv C$-2-Fur
1011	$-C(=CH_2)CH_3$	$-C\equiv C-CH=CH_2$	1038	$-C(=CH_2)CH_3$	$-CH_2C\equiv C$-3-Fur
1012	$-C(=CH_2)CH_3$	$-C\equiv C-C(=CH_2)CH_3$	1039	$-C(=CH_2)CH_3$	$-CH_2C\equiv C$-2-Imid
1013	$-C(=CH_2)CH_3$	$-C\equiv C$-2-pyridyl	1040	$-C(=CH_2)CH_3$	$-CH_2C\equiv C$-5-Imid
1014	$-C(=CH_2)CH_3$	$-C\equiv C$-3-pyridyl	1041	$-C(=CH_2)CH_3$	$-CH_2CH=CH_2$
1015	$-C(=CH_2)CH_3$	$-C\equiv C$-2-Fur	1042	$-C(=CH_2)CH_3$	$-CH_2CH=CH-CH_3$
1016	$-C(=CH_2)CH_3$	$-C\equiv C$-3-Fur	1043	$-C(=CH_2)CH_3$	$-CH_2CH=CH-CF_3$
1017	$-C(=CH_2)CH_3$	$-C\equiv C$-2-Imid	1044	$-C(=CH_2)CH_3$	$-CH_2CH=CH$-Et
1018	$-C(=CH_2)CH_3$	$-C\equiv C$-5-Imid	1045	$-C(=CH_2)CH_3$	$-CH_2CH=CH$-iPr
1019	$-C(=CH_2)CH_3$	$-CH=CH-CH_3$	1046	$-C(=CH_2)CH_3$	$-CH_2CH=CH$-cycPr
1020	$-C(=CH_2)CH_3$	$-CH=CH-CF_3$	1047	$-C(=CH_2)CH_3$	$-CH_2CH=CHCH=CH_2$
1021	$-C(=CH_2)CH_3$	-CH=CH-Et	1048	$-C(=CH_2)CH_3$	$-CH_2CH=C(CH_3)_2$
1022	$-C(=CH_2)CH_3$	-CH=CH-iPr	1049	$-C(=CH_2)CH_3$	$-CH_2CH=CH$-2-Fur
1023	$-C(=CH_2)CH_3$	-CH=CH-cycPr	1050	$-C(=CH_2)CH_3$	$-CH_2CH=CH$-3-Fur
1024	$-C(=CH_2)CH_3$	$-CH=CH-CH=CH_2$	1051	$-C(=CH_2)CH_3$	$-CH_2CH=CH$-2-Imid
1025	$-C(=CH_2)CH_3$	-CH=CH-2-pyridyl	1052	$-C(=CH_2)CH_3$	$-CH_2CH=CH$-5-Imid
1026	$-C(=CH_2)CH_3$	-CH=CH-3-pyridyl	1053	$-C(=CH_2)CH_3$	$-CH=CHCH_2$-cycPr
1027	$-C(=CH_2)CH_3$	-CH=CH-2-Fur	1054	$-C(=CH_2)CH_3$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1101	$CH_2CH=C(Me)_2$	n-butyl	1128	$CH_2CH=C(Me)_2$	-CH=CH-3-Fur
1102	$CH_2CH=C(Me)_2$	benzyl	1129	$CH_2CH=C(Me)_2$	-CH=CH-2-Imid
1103	$CH_2CH=C(Me)_2$	phenethyl	1130	$CH_2CH=C(Me)_2$	-CH=CH-5-Imid
1104	$CH_2CH=C(Me)_2$	$-CH_2CH_2$-cycPr	1131	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C-CH_3$
1105	$CH_2CH=C(Me)_2$	$-C\equiv C-CH_3$	1132	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C-CF_3$
1106	$CH_2CH=C(Me)_2$	$-C\equiv C-CF_3$	1133	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C$-Et
1107	$CH_2CH=C(Me)_2$	$-C\equiv C$-Et	1134	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C$-iPr
1108	$CH_2CH=C(Me)_2$	$-C\equiv C$-iPr	1135	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C$-cycPr
1109	$CH_2CH=C(Me)_2$	$-C\equiv C$-cycPr	1136	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C-CH=CH_2$
1110	$CH_2CH=C(Me)_2$	$-C\equiv C$-1-(Me)cycPr	1137	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C$-2-Fur
1111	$CH_2CH=C(Me)_2$	$-C\equiv C-CH=CH_2$	1138	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C$-3-Fur
1112	$CH_2CH=C(Me)_2$	$-C\equiv C-C(=CH_2)CH_3$	1139	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C$-2-Imid
1113	$CH_2CH=C(Me)_2$	$-C\equiv C$-2-pyridyl	1140	$CH_2CH=C(Me)_2$	$-CH_2C\equiv C$-5-Imid
1114	$CH_2CH=C(Me)_2$	$-C\equiv C$-3-pyridyl	1141	$CH_2CH=C(Me)_2$	$-CH_2CH=CH_2$
1115	$CH_2CH=C(Me)_2$	$-C\equiv C$-2-Fur	1142	$CH_2CH=C(Me)_2$	$-CH_2CH=CH-CH_3$
1116	$CH_2CH=C(Me)_2$	$-C\equiv C$-3-Fur	1143	$CH_2CH=C(Me)_2$	$-CH_2CH=CH-CF_3$
1117	$CH_2CH=C(Me)_2$	$-C\equiv C$-2-Imid	1144	$CH_2CH=C(Me)_2$	$-CH_2CH=CH$-Et
1118	$CH_2CH=C(Me)_2$	$-C\equiv C$-5-Imid	1145	$CH_2CH=C(Me)_2$	$-CH_2CH=CH$-iPr
1119	$CH_2CH=C(Me)_2$	$-CH=CH-CH_3$	1146	$CH_2CH=C(Me)_2$	$-CH_2CH=CH$-cycPr
1120	$CH_2CH=C(Me)_2$	$-CH=CH-CF_3$	1147	$CH_2CH=C(Me)_2$	$-CH_2CH=CHCH=CH_2$
1121	$CH_2CH=C(Me)_2$	-CH=CH-Et	1148	$CH_2CH=C(Me)_2$	$-CH_2CH=C(CH_3)_2$
1122	$CH_2CH=C(Me)_2$	-CH=CH-iPr	1149	$CH_2CH=C(Me)_2$	$-CH_2CH=CH$-2-Fur
1123	$CH_2CH=C(Me)_2$	-CH=CH-cycPr	1150	$CH_2CH=C(Me)_2$	$-CH_2CH=CH$-3-Fur
1124	$CH_2CH=C(Me)_2$	$-CH=CH-CH=CH_2$	1151	$CH_2CH=C(Me)_2$	$-CH_2CH=CH$-2-Imid
1125	$CH_2CH=C(Me)_2$	-CH=CH-2-pyridyl	1152	$CH_2CH=C(Me)_2$	$-CH_2CH=CH$-5-Imid
1126	$CH_2CH=C(Me)_2$	-CH=CH-3-pyridyl	1153	$CH_2CH=C(Me)_2$	$-CH=CHCH_2$-cycPr
1127	$CH_2CH=C(Me)_2$	-CH=CH-2-Fur	1154	$CH_2CH=C(Me)_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1101	benzyl	n-butyl	1128	benzyl	-CH=CH-3-Fur
1102	benzyl	benzyl	1129	benzyl	-CH=CH-2-Imid
1103	benzyl	phenethyl	1130	benzyl	-CH=CH-5-Imid
1104	benzyl	$-CH_2CH_2$-cycPr	1131	benzyl	$-CH_2C\equiv C-CH_3$
1105	benzyl	$-C\equiv C-CH_3$	1132	benzyl	$-CH_2C\equiv C-CF_3$
1106	benzyl	$-C\equiv C-CF_3$	1133	benzyl	$-CH_2C\equiv C$-Et
1107	benzyl	$-C\equiv C$-Et	1134	benzyl	$-CH_2C\equiv C$-iPr
1108	benzyl	$-C\equiv C$-iPr	1135	benzyl	$-CH_2C\equiv C$-cycPr
1109	benzyl	$-C\equiv C$-cycPr	1136	benzyl	$-CH_2C\equiv C-CH=CH_2$
1110	benzyl	$-C\equiv C$-1-(Me)cycPr	1137	benzyl	$-CH_2C\equiv C$-2-Fur
1111	benzyl	$-C\equiv C-CH=CH_2$	1138	benzyl	$-CH_2C\equiv C$-3-Fur
1112	benzyl	$-C\equiv C-C(=CH_2)CH_3$	1139	benzyl	$-CH_2C\equiv C$-2-Imid
1113	benzyl	$-C\equiv C$-2-pyridyl	1140	benzyl	$-CH_2C\equiv C$-5-Imid
1114	benzyl	$-C\equiv C$-3-pyridyl	1141	benzyl	$-CH_2CH=CH_2$
1115	benzyl	$-C\equiv C$-2-Fur	1142	benzyl	$-CH_2CH=CH-CH_3$
1116	benzyl	$-C\equiv C$-3-Fur	1143	benzyl	$-CH_2CH=CH-CF_3$
1117	benzyl	$-C\equiv C$-2-Imid	1144	benzyl	$-CH_2CH=CH$-Et
1118	benzyl	$-C\equiv C$-5-Imid	1145	benzyl	$-CH_2CH=CH$-iPr
1119	benzyl	$-CH=CH-CH_3$	1146	benzyl	$-CH_2CH=CH$-cycPr
1120	benzyl	$-CH=CH-CF_3$	1147	benzyl	$-CH_2CH=CHCH=CH_2$
1121	benzyl	-CH=CH-Et	1148	benzyl	$-CH_2CH=C(CH_3)_2$
1122	benzyl	-CH=CH-iPr	1149	benzyl	$-CH_2CH=CH$-2-Fur
1123	benzyl	-CH=CH-cycPr	1150	benzyl	$-CH_2CH=CH$-3-Fur
1124	benzyl	$-CH=CH-CH=CH_2$	1151	benzyl	$-CH_2CH=CH$-2-Imid
1125	benzyl	-CH=CH-2-pyridyl	1152	benzyl	$-CH_2CH=CH$-5-Imid
1126	benzyl	-CH=CH-3-pyridyl	1153	benzyl	$-CH=CHCH_2$-cycPr
1127	benzyl	-CH=CH-2-Fur	1154	benzyl	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1201	$-CH_2-C\equiv CH$	n-butyl	1228	$-CH_2-C\equiv CH$	-CH=CH-3-Fur
1202	$-CH_2-C\equiv CH$	benzyl	1229	$-CH_2-C\equiv CH$	-CH=CH-2-Imid
1203	$-CH_2-C\equiv CH$	phenethyl	1230	$-CH_2-C\equiv CH$	-CH=CH-5-Imid
1204	$-CH_2-C\equiv CH$	$-CH_2CH_2$-cycPr	1231	$-CH_2-C\equiv CH$	$-CH_2C\equiv C-CH_3$
1205	$-CH_2-C\equiv CH$	$-C\equiv C-CH_3$	1232	$-CH_2-C\equiv CH$	$-CH_2C\equiv C-CF_3$
1206	$-CH_2-C\equiv CH$	$-C\equiv C-CF_3$	1233	$-CH_2-C\equiv CH$	$-CH_2C\equiv C$-Et
1207	$-CH_2-C\equiv CH$	-C≡C-Et	1234	$-CH_2-C\equiv CH$	$-CH_2C\equiv C$-iPr
1208	$-CH_2-C\equiv CH$	-C≡C-iPr	1235	$-CH_2-C\equiv CH$	$-CH_2C\equiv C$-cycPr
1209	$-CH_2-C\equiv CH$	-C≡C-cycPr	1236	$-CH_2-C\equiv CH$	$-CH_2C\equiv C-CH=CH_2$
1210	$-CH_2-C\equiv CH$	-C≡C-1-(Me)cycPr	1237	$-CH_2-C\equiv CH$	$-CH_2C\equiv C$-2-Fur
1211	$-CH_2-C\equiv CH$	$-C\equiv C-CH=CH_2$	1238	$-CH_2-C\equiv CH$	$-CH_2C\equiv C$-3-Fur
1212	$-CH_2-C\equiv CH$	$-C\equiv C-C(=CH_2)CH_3$	1239	$-CH_2-C\equiv CH$	$-CH_2C\equiv C$-2-Imid
1213	$-CH_2-C\equiv CH$	-C≡C-2-pyridyl	1240	$-CH_2-C\equiv CH$	$-CH_2C\equiv C$-5-Imid
1214	$-CH_2-C\equiv CH$	-C≡C-3-pyridyl	1241	$-CH_2-C\equiv CH$	$-CH_2CH=CH_2$
1215	$-CH_2-C\equiv CH$	-C≡C-2-Fur	1242	$-CH_2-C\equiv CH$	$-CH_2CH=CH-CH_3$
1216	$-CH_2-C\equiv CH$	-C≡C-3-Fur	1243	$-CH_2-C\equiv CH$	$-CH_2CH=CH-CF_3$
1217	$-CH_2-C\equiv CH$	-C≡C-2-Imid	1244	$-CH_2-C\equiv CH$	$-CH_2CH=CH$-Et
1218	$-CH_2-C\equiv CH$	-C≡C-5-Imid	1245	$-CH_2-C\equiv CH$	$-CH_2CH=CH$-iPr
1219	$-CH_2-C\equiv CH$	$-CH=CH-CH_3$	1246	$-CH_2-C\equiv CH$	$-CH_2CH=CH$-cycPr
1220	$-CH_2-C\equiv CH$	$-CH=CH-CF_3$	1247	$-CH_2-C\equiv CH$	$-CH_2CH=CHCH=CH_2$
1221	$-CH_2-C\equiv CH$	-CH=CH-Et	1248	$-CH_2-C\equiv CH$	$-CH_2CH=C(CH_3)_2$
1222	$-CH_2-C\equiv CH$	-CH=CH-iPr	1249	$-CH_2-C\equiv CH$	$-CH_2CH=CH$-2-Fur
1223	$-CH_2-C\equiv CH$	-CH=CH-cycPr	1250	$-CH_2-C\equiv CH$	$-CH_2CH=CH$-3-Fur
1224	$-CH_2-C\equiv CH$	$-CH=CH-CH=CH_2$	1251	$-CH_2-C\equiv CH$	$-CH_2CH=CH$-2-Imid
1225	$-CH_2-C\equiv CH$	-CH=CH-2-pyridyl	1252	$-CH_2-C\equiv CH$	$-CH_2CH=CH$-5-Imid
1226	$-CH_2-C\equiv CH$	-CH=CH-3-pyridyl	1253	$-CH_2-C\equiv CH$	$-CH=CHCH_2$-cycPr
1227	$-CH_2-C\equiv CH$	-CH=CH-2-Fur	1254	$-CH_2-C\equiv CH$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1301	$-CO_2CH_3$	n-butyl	1328	$-CO_2CH_3$	-CH=CH-3-Fur
1302	$-CO_2CH_3$	benzyl	1329	$-CO_2CH_3$	-CH=CH-2-Imid
1303	$-CO_2CH_3$	phenethyl	1330	$-CO_2CH_3$	-CH=CH-5-Imid
1304	$-CO_2CH_3$	$-CH_2CH_2$-cycPr	1331	$-CO_2CH_3$	$-CH_2C\equiv C-CH_3$
1305	$-CO_2CH_3$	$-C\equiv C-CH_3$	1332	$-CO_2CH_3$	$-CH_2C\equiv C-CF_3$
1306	$-CO_2CH_3$	$-C\equiv C-CF_3$	1333	$-CO_2CH_3$	$-CH_2C\equiv C$-Et
1307	$-CO_2CH_3$	$-C\equiv C$-Et	1334	$-CO_2CH_3$	$-CH_2C\equiv C$-iPr
1308	$-CO_2CH_3$	$-C\equiv C$-iPr	1335	$-CO_2CH_3$	$-CH_2C\equiv C$-cycPr
1309	$-CO_2CH_3$	$-C\equiv C$-cycPr	1336	$-CO_2CH_3$	$-CH_2C\equiv C-CH=CH_2$
1310	$-CO_2CH_3$	$-C\equiv C$-1-(Me)cycPr	1337	$-CO_2CH_3$	$-CH_2C\equiv C$-2-Fur
1311	$-CO_2CH_3$	$-C\equiv C-CH=CH_2$	1338	$-CO_2CH_3$	$-CH_2C\equiv C$-3-Fur
1312	$-CO_2CH_3$	$-C\equiv C-C(=CH_2)CH_3$	1339	$-CO_2CH_3$	$-CH_2C\equiv C$-2-Imid
1313	$-CO_2CH_3$	$-C\equiv C$-2-pyridyl	1340	$-CO_2CH_3$	$-CH_2C\equiv C$-5-Imid
1314	$-CO_2CH_3$	$-C\equiv C$-3-pyridyl	1341	$-CO_2CH_3$	$-CH_2CH=CH_2$
1315	$-CO_2CH_3$	$-C\equiv C$-2-Fur	1342	$-CO_2CH_3$	$-CH_2CH=CH-CH_3$
1316	$-CO_2CH_3$	$-C\equiv C$-3-Fur	1343	$-CO_2CH_3$	$-CH_2CH=CH-CF_3$
1317	$-CO_2CH_3$	$-C\equiv C$-2-Imid	1344	$-CO_2CH_3$	$-CH_2CH=CH$-Et
1318	$-CO_2CH_3$	$-C\equiv C$-5-Imid	1345	$-CO_2CH_3$	$-CH_2CH=CH$-iPr
1319	$-CO_2CH_3$	-CH=CH-CH_3	1346	$-CO_2CH_3$	$-CH_2CH=CH$-cycPr
1320	$-CO_2CH_3$	-CH=CH-CF_3	1347	$-CO_2CH_3$	$-CH_2CH=CHCH=CH_2$
1321	$-CO_2CH_3$	-CH=CH-Et	1348	$-CO_2CH_3$	$-CH_2CH=C(CH_3)_2$
1322	$-CO_2CH_3$	-CH=CH-iPr	1349	$-CO_2CH_3$	$-CH_2CH=CH$-2-Fur
1323	$-CO_2CH_3$	-CH=CH-cycPr	1350	$-CO_2CH_3$	$-CH_2CH=CH$-3-Fur
1324	$-CO_2CH_3$	-CH=CH-$CH=CH_2$	1351	$-CO_2CH_3$	$-CH_2CH=CH$-2-Imid
1325	$-CO_2CH_3$	-CH=CH-2-pyridyl	1352	$-CO_2CH_3$	$-CH_2CH=CH$-5-Imid
1326	$-CO_2CH_3$	-CH=CH-3-pyridyl	1353	$-CO_2CH_3$	$-CH=CHCH_2$-cycPr
1327	$-CO_2CH_3$	-CH=CH-2-Fur	1354	$-CO_2CH_3$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1401	$-CO_2CH_2CH_3$	n-butyl	1428	$-CO_2CH_2CH_3$	-CH=CH-3-Fur
1402	$-CO_2CH_2CH_3$	benzyl	1429	$-CO_2CH_2CH_3$	-CH=CH-2-Imid
1403	$-CO_2CH_2CH_3$	phenethyl	1430	$-CO_2CH_2CH_3$	-CH=CH-5-Imid
1404	$-CO_2CH_2CH_3$	$-CH_2CH_2$-cycPr	1431	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C-CH_3$
1405	$-CO_2CH_2CH_3$	$-C{\equiv}C-CH_3$	1432	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C-CF_3$
1406	$-CO_2CH_2CH_3$	$-C{\equiv}C-CF_3$	1433	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C$-Et
1407	$-CO_2CH_2CH_3$	$-C{\equiv}C$-Et	1434	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C$-iPr
1408	$-CO_2CH_2CH_3$	$-C{\equiv}C$-iPr	1435	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C$-cycPr
1409	$-CO_2CH_2CH_3$	$-C{\equiv}C$-cycPr	1436	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C-CH{=}CH_2$
1410	$-CO_2CH_2CH_3$	$-C{\equiv}C$-1-(Me)cycPr	1437	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C$-2-Fur
1411	$-CO_2CH_2CH_3$	$-C{\equiv}C-CH{=}CH_2$	1438	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C$-3-Fur
1412	$-CO_2CH_2CH_3$	$-C{\equiv}C-C(=CH_2)CH_3$	1439	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C$-2-Imid
1413	$-CO_2CH_2CH_3$	$-C{\equiv}C$-2-pyridyl	1440	$-CO_2CH_2CH_3$	$-CH_2C{\equiv}C$-5-Imid
1414	$-CO_2CH_2CH_3$	$-C{\equiv}C$-3-pyridyl	1441	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH_2$
1415	$-CO_2CH_2CH_3$	$-C{\equiv}C$-2-Fur	1442	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH-CH_3$
1416	$-CO_2CH_2CH_3$	$-C{\equiv}C$-3-Fur	1443	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH-CF_3$
1417	$-CO_2CH_2CH_3$	$-C{\equiv}C$-2-Imid	1444	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH$-Et
1418	$-CO_2CH_2CH_3$	$-C{\equiv}C$-5-Imid	1445	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH$-iPr
1419	$-CO_2CH_2CH_3$	$-CH{=}CH-CH_3$	1446	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH$-cycPr
1420	$-CO_2CH_2CH_3$	$-CH{=}CH-CF_3$	1447	$-CO_2CH_2CH_3$	$-CH_2CH{=}CHCH{=}CH_2$
1421	$-CO_2CH_2CH_3$	-CH=CH-Et	1448	$-CO_2CH_2CH_3$	$-CH_2CH{=}C(CH_3)_2$
1422	$-CO_2CH_2CH_3$	-CH=CH-iPr	1449	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH$-2-Fur
1423	$-CO_2CH_2CH_3$	-CH=CH-cycPr	1450	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH$-3-Fur
1424	$-CO_2CH_2CH_3$	$-CH{=}CH-CH{=}CH_2$	1451	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH$-2-Imid
1425	$-CO_2CH_2CH_3$	-CH=CH-2-pyridyl	1452	$-CO_2CH_2CH_3$	$-CH_2CH{=}CH$-5-Imid
1426	$-CO_2CH_2CH_3$	-CH=CH-3-pyridyl	1453	$-CO_2CH_2CH_3$	$-CH{=}CHCH_2$-cycPr
1427	$-CO_2CH_2CH_3$	-CH=CH-2-Fur	1454	$-CO_2CH_2CH_3$	$-CH{=}CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1501	$-CO_2CH(CH_3)_2$	n-butyl	1528	$-CO_2CH(CH_3)_2$	-CH=CH-3-Fur
1502	$-CO_2CH(CH_3)_2$	benzyl	1529	$-CO_2CH(CH_3)_2$	-CH=CH-2-Imid
1503	$-CO_2CH(CH_3)_2$	phenethyl	1530	$-CO_2CH(CH_3)_2$	-CH=CH-5-Imid
1504	$-CO_2CH(CH_3)_2$	$-CH_2CH_2$-cycPr	1531	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C-CH_3$
1505	$-CO_2CH(CH_3)_2$	$-C\equiv C-CH_3$	1532	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C-CF_3$
1506	$-CO_2CH(CH_3)_2$	$-C\equiv C-CF_3$	1533	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C$-Et
1507	$-CO_2CH(CH_3)_2$	$-C\equiv C$-Et	1534	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C$-iPr
1508	$-CO_2CH(CH_3)_2$	$-C\equiv C$-iPr	1535	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C$-cycPr
1509	$-CO_2CH(CH_3)_2$	$-C\equiv C$-cycPr	1536	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C-CH=CH_2$
1510	$-CO_2CH(CH_3)_2$	$-C\equiv C$-1-(Me)cycPr	1537	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Fur
1511	$-CO_2CH(CH_3)_2$	$-C\equiv C-CH=CH_2$	1538	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C$-3-Fur
1512	$-CO_2CH(CH_3)_2$	$-C\equiv C-C(=CH_2)CH_3$	1539	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Imid
1513	$-CO_2CH(CH_3)_2$	$-C\equiv C$-2-pyridyl	1540	$-CO_2CH(CH_3)_2$	$-CH_2C\equiv C$-5-Imid
1514	$-CO_2CH(CH_3)_2$	$-C\equiv C$-3-pyridyl	1541	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH_2$
1515	$-CO_2CH(CH_3)_2$	$-C\equiv C$-2-Fur	1542	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH-CH_3$
1516	$-CO_2CH(CH_3)_2$	$-C\equiv C$-3-Fur	1543	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH-CF_3$
1517	$-CO_2CH(CH_3)_2$	$-C\equiv C$-2-Imid	1544	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH$-Et
1518	$-CO_2CH(CH_3)_2$	$-C\equiv C$-5-Imid	1545	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH$-iPr
1519	$-CO_2CH(CH_3)_2$	$-CH=CH-CH_3$	1546	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH$-cycPr
1520	$-CO_2CH(CH_3)_2$	$-CH=CH-CF_3$	1547	$-CO_2CH(CH_3)_2$	$-CH_2CH=CHCH=CH_2$
1521	$-CO_2CH(CH_3)_2$	-CH=CH-Et	1548	$-CO_2CH(CH_3)_2$	$-CH_2CH=C(CH_3)_2$
1522	$-CO_2CH(CH_3)_2$	-CH=CH-iPr	1549	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Fur
1523	$-CO_2CH(CH_3)_2$	-CH=CH-cycPr	1550	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH$-3-Fur
1524	$-CO_2CH(CH_3)_2$	$-CH=CH-CH=CH_2$	1551	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Imid
1525	$-CO_2CH(CH_3)_2$	-CH=CH-2-pyridyl	1552	$-CO_2CH(CH_3)_2$	$-CH_2CH=CH$-5-Imid
1526	$-CO_2CH(CH_3)_2$	-CH=CH-3-pyridyl	1553	$-CO_2CH(CH_3)_2$	$-CH=CHCH_2$-cycPr
1527	$-CO_2CH(CH_3)_2$	-CH=CH-2-Fur	1554	$-CO_2CH(CH_3)_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1601	$CO_2CH_2CH_2CH_3$	n-butyl	1628	$CO_2CH_2CH_2CH_3$	-CH=CH-3-Fur
1602	$CO_2CH_2CH_2CH_3$	benzyl	1629	$CO_2CH_2CH_2CH_3$	-CH=CH-2-Imid
1603	$CO_2CH_2CH_2CH_3$	phenethyl	1630	$CO_2CH_2CH_2CH_3$	-CH=CH-5-Imid
1604	$CO_2CH_2CH_2CH_3$	$-CH_2CH_2$-cycPr	1631	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C-CH_3$
1605	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C-CH_3$	1632	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C-CF_3$
1606	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C-CF_3$	1633	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C$-Et
1607	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-Et	1634	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C$-iPr
1608	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-iPr	1635	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C$-cycPr
1609	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-cycPr	1636	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C-CH{=}CH_2$
1610	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-1-(Me)cycPr	1637	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C$-2-Fur
1611	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C-CH{=}CH_2$	1638	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C$-3-Fur
1612	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C-C(=CH_2)CH_3$	1639	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C$-2-Imid
1613	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-2-pyridyl	1640	$CO_2CH_2CH_2CH_3$	$-CH_2C{\equiv}C$-5-Imid
1614	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-3-pyridyl	1641	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH_2$
1615	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-2-Fur	1642	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH-CH_3$
1616	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-3-Fur	1643	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH-CF_3$
1617	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-2-Imid	1644	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH$-Et
1618	$CO_2CH_2CH_2CH_3$	$-C{\equiv}C$-5-Imid	1645	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH$-iPr
1619	$CO_2CH_2CH_2CH_3$	$-CH{=}CH-CH_3$	1646	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH$-cycPr
1620	$CO_2CH_2CH_2CH_3$	$-CH{=}CH-CF_3$	1647	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CHCH{=}CH_2$
1621	$CO_2CH_2CH_2CH_3$	$-CH{=}CH$-Et	1648	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}C(CH_3)_2$
1622	$CO_2CH_2CH_2CH_3$	$-CH{=}CH$-iPr	1649	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH$-2-Fur
1623	$CO_2CH_2CH_2CH_3$	$-CH{=}CH$-cycPr	1650	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH$-3-Fur
1624	$CO_2CH_2CH_2CH_3$	$-CH{=}CH-CH{=}CH_2$	1651	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH$-2-Imid
1625	$CO_2CH_2CH_2CH_3$	$-CH{=}CH$-2-pyridyl	1652	$CO_2CH_2CH_2CH_3$	$-CH_2CH{=}CH$-5-Imid
1626	$CO_2CH_2CH_2CH_3$	$-CH{=}CH$-3-pyridyl	1653	$CO_2CH_2CH_2CH_3$	$-CH{=}CHCH_2$-cycPr
1627	$CO_2CH_2CH_2CH_3$	$-CH{=}CH$-2-Fur	1654	$CO_2CH_2CH_2CH_3$	$-CH{=}CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1701	$-CO_2CH_2CH(CH_3)_2$	n-butyl	1728	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-3-Fur
1702	$-CO_2CH_2CH(CH_3)_2$	benzyl	1729	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-2-Imid
1703	$-CO_2CH_2CH(CH_3)_2$	phenethyl	1730	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-5-Imid
1704	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH_2$-cycPr	1731	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CH_3$
1705	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C-CH_3$	1732	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CF_3$
1706	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C-CF_3$	1733	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-Et
1707	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-Et	1734	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-iPr
1708	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-iPr	1735	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-cycPr
1709	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-cycPr	1736	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C-CH=CH_2$
1710	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-1-(Me)cycPr	1737	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Fur
1711	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C-CH=CH_2$	1738	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-3-Fur
1712	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C-C(=CH_2)CH_3$	1739	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Imid
1713	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-2-pyridyl	1740	$-CO_2CH_2CH(CH_3)_2$	$-CH_2C\equiv C$-5-Imid
1714	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-3-pyridyl	1741	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH_2$
1715	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-2-Fur	1742	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH-CH_3$
1716	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-3-Fur	1743	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH-CF_3$
1717	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-2-Imid	1744	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-Et
1718	$-CO_2CH_2CH(CH_3)_2$	$-C\equiv C$-5-Imid	1745	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-iPr
1719	$-CO_2CH_2CH(CH_3)_2$	$-CH=CH-CH_3$	1746	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-cycPr
1720	$-CO_2CH_2CH(CH_3)_2$	$-CH=CH-CF_3$	1747	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CHCH=CH_2$
1721	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-Et	1748	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=C(CH_3)_2$
1722	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-iPr	1749	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Fur
1723	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-cycPr	1750	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-3-Fur
1724	$-CO_2CH_2CH(CH_3)_2$	$-CH=CH-CH=CH_2$	1751	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Imid
1725	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-2-pyridyl	1752	$-CO_2CH_2CH(CH_3)_2$	$-CH_2CH=CH$-5-Imid
1726	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-3-pyridyl	1753	$-CO_2CH_2CH(CH_3)_2$	$-CH=CHCH_2$-cycPr
1727	$-CO_2CH_2CH(CH_3)_2$	-CH=CH-2-Fur	1754	$-CO_2CH_2CH(CH_3)_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1801	$-CO_2(CH_2)_3CH_3$	n-butyl	1828	$-CO_2(CH_2)_3CH_3$	-CH=CH-3-Fur
1802	$-CO_2(CH_2)_3CH_3$	benzyl	1829	$-CO_2(CH_2)_3CH_3$	-CH=CH-2-Imid
1803	$-CO_2(CH_2)_3CH_3$	phenethyl	1830	$-CO_2(CH_2)_3CH_3$	-CH=CH-5-Imid
1804	$-CO_2(CH_2)_3CH_3$	$-CH_2CH_2$-cycPr	1831	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C-CH_3$
1805	$-CO_2(CH_2)_3CH_3$	$-C\equiv C-CH_3$	1832	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C-CF_3$
1806	$-CO_2(CH_2)_3CH_3$	$-C\equiv C-CF_3$	1833	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C$-Et
1807	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-Et	1834	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C$-iPr
1808	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-iPr	1835	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C$-cycPr
1809	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-cycPr	1836	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C-CH=CH_2$
1810	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-1-(Me)cycPr	1837	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C$-2-Fur
1811	$-CO_2(CH_2)_3CH_3$	$-C\equiv C-CH=CH_2$	1838	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C$-3-Fur
1812	$-CO_2(CH_2)_3CH_3$	$-C\equiv C-C(=CH_2)CH_3$	1839	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C$-2-Imid
1813	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-2-pyridyl	1840	$-CO_2(CH_2)_3CH_3$	$-CH_2C\equiv C$-5-Imid
1814	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-3-pyridyl	1841	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH_2$
1815	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-2-Fur	1842	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH-CH_3$
1816	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-3-Fur	1843	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH-CF_3$
1817	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-2-Imid	1844	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH$-Et
1818	$-CO_2(CH_2)_3CH_3$	$-C\equiv C$-5-Imid	1845	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH$-iPr
1819	$-CO_2(CH_2)_3CH_3$	$-CH=CH-CH_3$	1846	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH$-cycPr
1820	$-CO_2(CH_2)_3CH_3$	$-CH=CH-CF_3$	1847	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CHCH=CH_2$
1821	$-CO_2(CH_2)_3CH_3$	-CH=CH-Et	1848	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=C(CH_3)_2$
1822	$-CO_2(CH_2)_3CH_3$	-CH=CH-iPr	1849	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH$-2-Fur
1823	$-CO_2(CH_2)_3CH_3$	-CH=CH-cycPr	1850	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH$-3-Fur
1824	$-CO_2(CH_2)_3CH_3$	$-CH=CH-CH=CH_2$	1851	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH$-2-Imid
1825	$-CO_2(CH_2)_3CH_3$	-CH=CH-2-pyridyl	1852	$-CO_2(CH_2)_3CH_3$	$-CH_2CH=CH$-5-Imid
1826	$-CO_2(CH_2)_3CH_3$	-CH=CH-3-pyridyl	1853	$-CO_2(CH_2)_3CH_3$	$-CH=CHCH_2$-cycPr
1827	$-CO_2(CH_2)_3CH_3$	-CH=CH-2-Fur	1854	$-CO_2(CH_2)_3CH_3$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
1901	$-CO_2CH_2CH=CH_2$	n-butyl	1928	$-CO_2CH_2CH=CH_2$	-CH=CH-3-Fur
1902	$-CO_2CH_2CH=CH_2$	benzyl	1929	$-CO_2CH_2CH=CH_2$	-CH=CH-2-Imid
1903	$-CO_2CH_2CH=CH_2$	phenethyl	1930	$-CO_2CH_2CH=CH_2$	-CH=CH-5-Imid
1904	$-CO_2CH_2CH=CH_2$	$-CH_2CH_2$-cycPr	1931	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C-CH_3$
1905	$-CO_2CH_2CH=CH_2$	$-C\equiv C-CH_3$	1932	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C-CF_3$
1906	$-CO_2CH_2CH=CH_2$	$-C\equiv C-CF_3$	1933	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C$-Et
1907	$-CO_2CH_2CH=CH_2$	-C≡C-Et	1934	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C$-iPr
1908	$-CO_2CH_2CH=CH_2$	-C≡C-iPr	1935	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C$-cycPr
1909	$-CO_2CH_2CH=CH_2$	-C≡C-cycPr	1936	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C-CH=CH_2$
1910	$-CO_2CH_2CH=CH_2$	-C≡C-1-(Me)cycPr	1937	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C$-2-Fur
1911	$-CO_2CH_2CH=CH_2$	$-C\equiv C-CH=CH_2$	1938	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C$-3-Fur
1912	$-CO_2CH_2CH=CH_2$	$-C\equiv C-C(=CH_2)CH_3$	1939	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C$-2-Imid
1913	$-CO_2CH_2CH=CH_2$	-C≡C-2-pyridyl	1940	$-CO_2CH_2CH=CH_2$	$-CH_2C\equiv C$-5-Imid
1914	$-CO_2CH_2CH=CH_2$	-C≡C-3-pyridyl	1941	$-CO_2CH_2CH=CH_2$	$-CH_2CH=CH_2$
1915	$-CO_2CH_2CH=CH_2$	-C≡C-2-Fur	1942	$-CO_2CH_2CH=CH_2$	$-CH_2CH=CH-CH_3$
1916	$-CO_2CH_2CH=CH_2$	-C≡C-3-Fur	1943	$-CO_2CH_2CH=CH_2$	$-CH_2CH=CH-CF_3$
1917	$-CO_2CH_2CH=CH_2$	-C≡C-2-Imid	1944	$-CO_2CH_2CH=CH_2$	-CH2CH=CH-Et
1918	$-CO_2CH_2CH=CH_2$	-C≡C-5-Imid	1945	$-CO_2CH_2CH=CH_2$	-CH2CH=CH-iPr
1919	$-CO_2CH_2CH=CH_2$	$-CH=CH-CH_3$	1946	$-CO_2CH_2CH=CH_2$	-CH2CH=CH-cycPr
1920	$-CO_2CH_2CH=CH_2$	$-CH=CH-CF_3$	1947	$-CO_2CH_2CH=CH_2$	$-CH_2CH=CHCH=CH_2$
1921	$-CO_2CH_2CH=CH_2$	-CH=CH-Et	1948	$-CO_2CH_2CH=CH_2$	$-CH_2CH=C(CH_3)_2$
1922	$-CO_2CH_2CH=CH_2$	-CH=CH-iPr	1949	$-CO_2CH_2CH=CH_2$	-CH2CH=CH-2-Fur
1923	$-CO_2CH_2CH=CH_2$	-CH=CH-cycPr	1950	$-CO_2CH_2CH=CH_2$	-CH2CH=CH-3-Fur
1924	$-CO_2CH_2CH=CH_2$	$-CH=CH-CH=CH_2$	1951	$-CO_2CH_2CH=CH_2$	-CH2CH=CH-2-Imid
1925	$-CO_2CH_2CH=CH_2$	-CH=CH-2-pyridyl	1952	$-CO_2CH_2CH=CH_2$	-CH2CH=CH-5-Imid
1926	$-CO_2CH_2CH=CH_2$	-CH=CH-3-pyridyl	1953	$-CO_2CH_2CH=CH_2$	$-CH=CHCH_2$-cycPr
1927	$-CO_2CH_2CH=CH_2$	-CH=CH-2-Fur	1954	$-CO_2CH_2CH=CH_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2001	$-CO_2CH_2(C_6H_5)$	n-butyl	2028	$-CO_2CH_2(C_6H_5)$	-CH=CH-3-Fur
2002	$-CO_2CH_2(C_6H_5)$	benzyl	2029	$-CO_2CH_2(C_6H_5)$	-CH=CH-2-Imid
2003	$-CO_2CH_2(C_6H_5)$	phenethyl	2030	$-CO_2CH_2(C_6H_5)$	-CH=CH-5-Imid
2004	$-CO_2CH_2(C_6H_5)$	$-CH_2CH_2$-cycPr	2031	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C-CH_3$
2005	$-CO_2CH_2(C_6H_5)$	$-C\equiv C-CH_3$	2032	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C-CF_3$
2006	$-CO_2CH_2(C_6H_5)$	$-C\equiv C-CF_3$	2033	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C$-Et
2007	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-Et	2034	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C$-iPr
2008	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-iPr	2035	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C$-cycPr
2009	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-cycPr	2036	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C-CH=CH_2$
2010	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-1-(Me)cycPr	2037	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C$-2-Fur
2011	$-CO_2CH_2(C_6H_5)$	$-C\equiv C-CH=CH_2$	2038	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C$-3-Fur
2012	$-CO_2CH_2(C_6H_5)$	$-C\equiv C-C(=CH_2)CH_3$	2039	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C$-2-Imid
2013	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-2-pyridyl	2040	$-CO_2CH_2(C_6H_5)$	$-CH_2C\equiv C$-5-Imid
2014	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-3-pyridyl	2041	$-CO_2CH_2(C_6H_5)$	$-CH_2CH=CH_2$
2015	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-2-Fur	2042	$-CO_2CH_2(C_6H_5)$	$-CH_2CH=CH-CH_3$
2016	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-3-Fur	2043	$-CO_2CH_2(C_6H_5)$	$-CH_2CH=CH-CF_3$
2017	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-2-Imid	2044	$-CO_2CH_2(C_6H_5)$	$-CH_2CH=CH$-Et
2018	$-CO_2CH_2(C_6H_5)$	$-C\equiv C$-5-Imid	2045	$-CO_2CH_2(C_6H_5)$	$-CH_2CH=CH$-iPr
2019	$-CO_2CH_2(C_6H_5)$	$-CH=CH-CH_3$	2046	$-CO_2CH_2(C_6H_5)$	$-CH_2CH=CH$-cycPr
2020	$-CO_2CH_2(C_6H_5)$	$-CH=CH-CF_3$	2047	$-CO_2CH_2(C_6H_5)$	$-CH_2CH=CHCH=CH_2$
2021	$-CO_2CH_2(C_6H_5)$	-CH=CH-Et	2048	$-CO_2CH_2(C_6H_5)$	$-CH_2CH=C(CH_3)_2$
2022	$-CO_2CH_2(C_6H_5)$	-CH=CH-iPr	2049	$-CO_2CH_2(C_6H_5)$	-CH2CH=CH-2-Fur
2023	$-CO_2CH_2(C_6H_5)$	-CH=CH-cycPr	2050	$-CO_2CH_2(C_6H_5)$	-CH2CH=CH-3-Fur
2024	$-CO_2CH_2(C_6H_5)$	$-CH=CH-CH=CH_2$	2051	$-CO_2CH_2(C_6H_5)$	-CH2CH=CH-2-Imid
2025	$-CO_2CH_2(C_6H_5)$	-CH=CH-2-pyridyl	2052	$-CO_2CH_2(C_6H_5)$	-CH2CH=CH-5-Imid
2026	$-CO_2CH_2(C_6H_5)$	-CH=CH-3-pyridyl	2053	$-CO_2CH_2(C_6H_5)$	$-CH=CHCH_2$-cycPr
2027	$-CO_2CH_2(C_6H_5)$	-CH=CH-2-Fur	2054	$-CO_2CH_2(C_6H_5)$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2101	$-CO_2$cycPr	n-butyl	2128	$-CO_2$cycPr	-CH=CH-3-Fur
2102	$-CO_2$cycPr	benzyl	2129	$-CO_2$cycPr	-CH=CH-2-Imid
2103	$-CO_2$cycPr	phenethyl	2130	$-CO_2$cycPr	-CH=CH-5-Imid
2104	$-CO_2$cycPr	$-CH_2CH_2$-cycPr	2131	$-CO_2$cycPr	$-CH_2C\equiv C-CH_3$
2105	$-CO_2$cycPr	$-C\equiv C-CH_3$	2132	$-CO_2$cycPr	$-CH_2C\equiv C-CF_3$
2106	$-CO_2$cycPr	$-C\equiv C-CF_3$	2133	$-CO_2$cycPr	$-CH_2C\equiv C$-Et
2107	$-CO_2$cycPr	$-C\equiv C$-Et	2134	$-CO_2$cycPr	$-CH_2C\equiv C$-iPr
2108	$-CO_2$cycPr	$-C\equiv C$-iPr	2135	$-CO_2$cycPr	$-CH_2C\equiv C$-cycPr
2109	$-CO_2$cycPr	$-C\equiv C$-cycPr	2136	$-CO_2$cycPr	$-CH_2C\equiv C-CH=CH_2$
2110	$-CO_2$cycPr	$-C\equiv C$-1-(Me)cycPr	2137	$-CO_2$cycPr	$-CH_2C\equiv C$-2-Fur
2111	$-CO_2$cycPr	$-C\equiv C-CH=CH_2$	2138	$-CO_2$cycPr	$-CH_2C\equiv C$-3-Fur
2112	$-CO_2$cycPr	$-C\equiv C-C(=CH_2)CH_3$	2139	$-CO_2$cycPr	$-CH_2C\equiv C$-2-Imid
2113	$-CO_2$cycPr	$-C\equiv C$-2-pyridyl	2140	$-CO_2$cycPr	$-CH_2C\equiv C$-5-Imid
2114	$-CO_2$cycPr	$-C\equiv C$-3-pyridyl	2141	$-CO_2$cycPr	$-CH_2CH=CH_2$
2115	$-CO_2$cycPr	$-C\equiv C$-2-Fur	2142	$-CO_2$cycPr	$-CH_2CH=CH-CH_3$
2116	$-CO_2$cycPr	$-C\equiv C$-3-Fur	2143	$-CO_2$cycPr	$-CH_2CH=CH-CF_3$
2117	$-CO_2$cycPr	$-C\equiv C$-2-Imid	2144	$-CO_2$cycPr	$-CH_2CH=CH$-Et
2118	$-CO_2$cycPr	$-C\equiv C$-5-Imid	2145	$-CO_2$cycPr	$-CH_2CH=CH$-iPr
2119	$-CO_2$cycPr	$-CH=CH-CH_3$	2146	$-CO_2$cycPr	$-CH_2CH=CH$-cycPr
2120	$-CO_2$cycPr	$-CH=CH-CF_3$	2147	$-CO_2$cycPr	$-CH_2CH=CHCH=CH_2$
2121	$-CO_2$cycPr	-CH=CH-Et	2148	$-CO_2$cycPr	$-CH_2CH=C(CH_3)_2$
2122	$-CO_2$cycPr	-CH=CH-iPr	2149	$-CO_2$cycPr	$-CH_2CH=CH$-2-Fur
2123	$-CO_2$cycPr	-CH=CH-cycPr	2150	$-CO_2$cycPr	$-CH_2CH=CH$-3-Fur
2124	$-CO_2$cycPr	$-CH=CH-CH=CH_2$	2151	$-CO_2$cycPr	$-CH_2CH=CH$-2-Imid
2125	$-CO_2$cycPr	-CH=CH-2-pyridyl	2152	$-CO_2$cycPr	$-CH_2CH=CH$-5-Imid
2126	$-CO_2$cycPr	-CH=CH-3-pyridyl	2153	$-CO_2$cycPr	$-CH=CHCH_2$-cycPr
2127	$-CO_2$cycPr	-CH=CH-2-Fur	2154	$-CO_2$cycPr	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2201	$-CO_2CH_2$cycPr	n-butyl	2228	$-CO_2CH_2$cycPr	-CH=CH-3-Fur
2202	$-CO_2CH_2$cycPr	benzyl	2229	$-CO_2CH_2$cycPr	-CH=CH-2-Imid
2203	$-CO_2CH_2$cycPr	phenethyl	2230	$-CO_2CH_2$cycPr	-CH=CH-5-Imid
2204	$-CO_2CH_2$cycPr	$-CH_2CH_2$-cycPr	2231	$-CO_2CH_2$cycPr	$-CH_2C\equiv C-CH_3$
2205	$-CO_2CH_2$cycPr	$-C\equiv C-CH_3$	2232	$-CO_2CH_2$cycPr	$-CH_2C\equiv C-CF_3$
2206	$-CO_2CH_2$cycPr	$-C\equiv C-CF_3$	2233	$-CO_2CH_2$cycPr	$-CH_2C\equiv C$-Et
2207	$-CO_2CH_2$cycPr	$-C\equiv C$-Et	2234	$-CO_2CH_2$cycPr	$-CH_2C\equiv C$-iPr
2208	$-CO_2CH_2$cycPr	$-C\equiv C$-iPr	2235	$-CO_2CH_2$cycPr	$-CH_2C\equiv C$-cycPr
2209	$-CO_2CH_2$cycPr	$-C\equiv C$-cycPr	2236	$-CO_2CH_2$cycPr	$-CH_2C\equiv C-CH=CH_2$
2210	$-CO_2CH_2$cycPr	$-C\equiv C$-1-(Me)cycPr	2237	$-CO_2CH_2$cycPr	$-CH_2C\equiv C$-2-Fur
2211	$-CO_2CH_2$cycPr	$-C\equiv C-CH=CH_2$	2238	$-CO_2CH_2$cycPr	$-CH_2C\equiv C$-3-Fur
2212	$-CO_2CH_2$cycPr	$-C\equiv C-C(=CH_2)CH_3$	2239	$-CO_2CH_2$cycPr	$-CH_2C\equiv C$-2-Imid
2213	$-CO_2CH_2$cycPr	$-C\equiv C$-2-pyridyl	2240	$-CO_2CH_2$cycPr	$-CH_2C\equiv C$-5-Imid
2214	$-CO_2CH_2$cycPr	$-C\equiv C$-3-pyridyl	2241	$-CO_2CH_2$cycPr	$-CH_2CH=CH_2$
2215	$-CO_2CH_2$cycPr	$-C\equiv C$-2-Fur	2242	$-CO_2CH_2$cycPr	$-CH_2CH=CH-CH_3$
2216	$-CO_2CH_2$cycPr	$-C\equiv C$-3-Fur	2243	$-CO_2CH_2$cycPr	$-CH_2CH=CH-CF_3$
2217	$-CO_2CH_2$cycPr	$-C\equiv C$-2-Imid	2244	$-CO_2CH_2$cycPr	$-CH_2CH=CH$-Et
2218	$-CO_2CH_2$cycPr	$-C\equiv C$-5-Imid	2245	$-CO_2CH_2$cycPr	$-CH_2CH=CH$-iPr
2219	$-CO_2CH_2$cycPr	$-CH=CH-CH_3$	2246	$-CO_2CH_2$cycPr	$-CH_2CH=CH$-cycPr
2220	$-CO_2CH_2$cycPr	$-CH=CH-CF_3$	2247	$-CO_2CH_2$cycPr	$-CH_2CH=CHCH=CH_2$
2221	$-CO_2CH_2$cycPr	-CH=CH-Et	2248	$-CO_2CH_2$cycPr	$-CH_2CH=C(CH_3)_2$
2222	$-CO_2CH_2$cycPr	-CH=CH-iPr	2249	$-CO_2CH_2$cycPr	$-CH_2CH=CH$-2-Fur
2223	$-CO_2CH_2$cycPr	-CH=CH-cycPr	2250	$-CO_2CH_2$cycPr	$-CH_2CH=CH$-3-Fur
2224	$-CO_2CH_2$cycPr	$-CH=CH-CH=CH_2$	2251	$-CO_2CH_2$cycPr	$-CH_2CH=CH$-2-Imid
2225	$-CO_2CH_2$cycPr	-CH=CH-2-pyridyl	2252	$-CO_2CH_2$cycPr	$-CH_2CH=CH$-5-Imid
2226	$-CO_2CH_2$cycPr	-CH=CH-3-pyridyl	2253	$-CO_2CH_2$cycPr	$-CH=CHCH_2$-cycPr
2227	$-CO_2CH_2$cycPr	-CH=CH-2-Fur	2254	$-CO_2CH_2$cycPr	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2301	$-SO_2CH_2CH_3$	n-butyl	2328	$-SO_2CH_2CH_3$	-CH=CH-3-Fur
2302	$-SO_2CH_2CH_3$	benzyl	2329	$-SO_2CH_2CH_3$	-CH=CH-2-Imid
2303	$-SO_2CH_2CH_3$	phenethyl	2330	$-SO_2CH_2CH_3$	-CH=CH-5-Imid
2304	$-SO_2CH_2CH_3$	$-CH_2CH_2$-cycPr	2331	$-SO_2CH_2CH_3$	$-CH_2C\equiv C-CH_3$
2305	$-SO_2CH_2CH_3$	$-C\equiv C-CH_3$	2332	$-SO_2CH_2CH_3$	$-CH_2C\equiv C-CF_3$
2306	$-SO_2CH_2CH_3$	$-C\equiv C-CF_3$	2333	$-SO_2CH_2CH_3$	$-CH_2C\equiv C$-Et
2307	$-SO_2CH_2CH_3$	$-C\equiv C$-Et	2334	$-SO_2CH_2CH_3$	$-CH_2C\equiv C$-iPr
2308	$-SO_2CH_2CH_3$	$-C\equiv C$-iPr	2335	$-SO_2CH_2CH_3$	$-CH_2C\equiv C$-cycPr
2309	$-SO_2CH_2CH_3$	$-C\equiv C$-cycPr	2336	$-SO_2CH_2CH_3$	$-CH_2C\equiv C-CH=CH_2$
2310	$-SO_2CH_2CH_3$	$-C\equiv C$-1-(Me)cycPr	2337	$-SO_2CH_2CH_3$	$-CH_2C\equiv C$-2-Fur
2311	$-SO_2CH_2CH_3$	$-C\equiv C-CH=CH_2$	2338	$-SO_2CH_2CH_3$	$-CH_2C\equiv C$-3-Fur
2312	$-SO_2CH_2CH_3$	$-C\equiv C-C(=CH_2)CH_3$	2339	$-SO_2CH_2CH_3$	$-CH_2C\equiv C$-2-Imid
2313	$-SO_2CH_2CH_3$	$-C\equiv C$-2-pyridyl	2340	$-SO_2CH_2CH_3$	$-CH_2C\equiv C$-5-Imid
2314	$-SO_2CH_2CH_3$	$-C\equiv C$-3-pyridyl	2341	$-SO_2CH_2CH_3$	$-CH_2CH=CH_2$
2315	$-SO_2CH_2CH_3$	$-C\equiv C$-2-Fur	2342	$-SO_2CH_2CH_3$	$-CH_2CH=CH-CH_3$
2316	$-SO_2CH_2CH_3$	$-C\equiv C$-3-Fur	2343	$-SO_2CH_2CH_3$	$-CH_2CH=CH-CF_3$
2317	$-SO_2CH_2CH_3$	$-C\equiv C$-2-Imid	2344	$-SO_2CH_2CH_3$	$-CH_2CH=CH$-Et
2318	$-SO_2CH_2CH_3$	$-C\equiv C$-5-Imid	2345	$-SO_2CH_2CH_3$	$-CH_2CH=CH$-iPr
2319	$-SO_2CH_2CH_3$	$-CH=CH-CH_3$	2346	$-SO_2CH_2CH_3$	$-CH_2CH=CH$-cycPr
2320	$-SO_2CH_2CH_3$	$-CH=CH-CF_3$	2347	$-SO_2CH_2CH_3$	$-CH_2CH=CHCH=CH_2$
2321	$-SO_2CH_2CH_3$	-CH=CH-Et	2348	$-SO_2CH_2CH_3$	$-CH_2CH=C(CH_3)_2$
2322	$-SO_2CH_2CH_3$	-CH=CH-iPr	2349	$-SO_2CH_2CH_3$	$-CH_2CH=CH$-2-Fur
2323	$-SO_2CH_2CH_3$	-CH=CH-cycPr	2350	$-SO_2CH_2CH_3$	$-CH_2CH=CH$-3-Fur
2324	$-SO_2CH_2CH_3$	$-CH=CH-CH=CH_2$	2351	$-SO_2CH_2CH_3$	$-CH_2CH=CH$-2-Imid
2325	$-SO_2CH_2CH_3$	-CH=CH-2-pyridyl	2352	$-SO_2CH_2CH_3$	$-CH_2CH=CH$-5-Imid
2326	$-SO_2CH_2CH_3$	-CH=CH-3-pyridyl	2353	$-SO_2CH_2CH_3$	$-CH=CHCH_2$-cycPr
2327	$-SO_2CH_2CH_3$	-CH=CH-2-Fur	2354	$-SO_2CH_2CH_3$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2401	$-SO_2CH(CH_3)_2$	n-butyl	2428	$-SO_2CH(CH_3)_2$	-CH=CH-3-Fur
2402	$-SO_2CH(CH_3)_2$	benzyl	2429	$-SO_2CH(CH_3)_2$	-CH=CH-2-Imid
2403	$-SO_2CH(CH_3)_2$	phenethyl	2430	$-SO_2CH(CH_3)_2$	-CH=CH-5-Imid
2404	$-SO_2CH(CH_3)_2$	$-CH_2CH_2$-cycPr	2431	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C-CH_3$
2405	$-SO_2CH(CH_3)_2$	$-C\equiv C-CH_3$	2432	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C-CF_3$
2406	$-SO_2CH(CH_3)_2$	$-C\equiv C-CF_3$	2433	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C$-Et
2407	$-SO_2CH(CH_3)_2$	$-C\equiv C$-Et	2434	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C$-iPr
2408	$-SO_2CH(CH_3)_2$	$-C\equiv C$-iPr	2435	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C$-cycPr
2409	$-SO_2CH(CH_3)_2$	$-C\equiv C$-cycPr	2436	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C-CH=CH_2$
2410	$-SO_2CH(CH_3)_2$	$-C\equiv C$-1-(Me)cycPr	2437	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Fur
2411	$-SO_2CH(CH_3)_2$	$-C\equiv C-CH=CH_2$	2438	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C$-3-Fur
2412	$-SO_2CH(CH_3)_2$	$-C\equiv C-C(=CH_2)CH_3$	2439	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C$-2-Imid
2413	$-SO_2CH(CH_3)_2$	$-C\equiv C$-2-pyridyl	2440	$-SO_2CH(CH_3)_2$	$-CH_2C\equiv C$-5-Imid
2414	$-SO_2CH(CH_3)_2$	$-C\equiv C$-3-pyridyl	2441	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH_2$
2415	$-SO_2CH(CH_3)_2$	$-C\equiv C$-2-Fur	2442	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH-CH_3$
2416	$-SO_2CH(CH_3)_2$	$-C\equiv C$-3-Fur	2443	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH-CF_3$
2417	$-SO_2CH(CH_3)_2$	$-C\equiv C$-2-Imid	2444	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH$-Et
2418	$-SO_2CH(CH_3)_2$	$-C\equiv C$-5-Imid	2445	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH$-iPr
2419	$-SO_2CH(CH_3)_2$	$-CH=CH-CH_3$	2446	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH$-cycPr
2420	$-SO_2CH(CH_3)_2$	$-CH=CH-CF_3$	2447	$-SO_2CH(CH_3)_2$	$-CH_2CH=CHCH=CH_2$
2421	$-SO_2CH(CH_3)_2$	-CH=CH-Et	2448	$-SO_2CH(CH_3)_2$	$-CH_2CH=C(CH_3)_2$
2422	$-SO_2CH(CH_3)_2$	-CH=CH-iPr	2449	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Fur
2423	$-SO_2CH(CH_3)_2$	-CH=CH-cycPr	2450	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH$-3-Fur
2424	$-SO_2CH(CH_3)_2$	$-CH=CH-CH=CH_2$	2451	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH$-2-Imid
2425	$-SO_2CH(CH_3)_2$	-CH=CH-2-pyridyl	2452	$-SO_2CH(CH_3)_2$	$-CH_2CH=CH$-5-Imid
2426	$-SO_2CH(CH_3)_2$	-CH=CH-3-pyridyl	2453	$-SO_2CH(CH_3)_2$	$-CH=CHCH_2$-cycPr
2427	$-SO_2CH(CH_3)_2$	-CH=CH-2-Fur	2454	$-SO_2CH(CH_3)_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2501	$-C(=O)CH_3$	n-butyl	2528	$-C(=O)CH_3$	-CH=CH-3-Fur
2502	$-C(=O)CH_3$	benzyl	2529	$-C(=O)CH_3$	-CH=CH-2-Imid
2503	$-C(=O)CH_3$	phenethyl	2530	$-C(=O)CH_3$	-CH=CH-5-Imid
2504	$-C(=O)CH_3$	$-CH_2CH_2$-cycPr	2531	$-C(=O)CH_3$	$-CH_2C\equiv C-CH_3$
2505	$-C(=O)CH_3$	$-C\equiv C-CH_3$	2532	$-C(=O)CH_3$	$-CH_2C\equiv C-CF_3$
2506	$-C(=O)CH_3$	$-C\equiv C-CF_3$	2533	$-C(=O)CH_3$	$-CH_2C\equiv C$-Et
2507	$-C(=O)CH_3$	$-C\equiv C$-Et	2534	$-C(=O)CH_3$	$-CH_2C\equiv C$-iPr
2508	$-C(=O)CH_3$	$-C\equiv C$-iPr	2535	$-C(=O)CH_3$	$-CH_2C\equiv C$-cycPr
2509	$-C(=O)CH_3$	$-C\equiv C$-cycPr	2536	$-C(=O)CH_3$	$-CH_2C\equiv C-CH=CH_2$
2510	$-C(=O)CH_3$	$-C\equiv C$-1-(Me)cycPr	2537	$-C(=O)CH_3$	$-CH_2C\equiv C$-2-Fur
2511	$-C(=O)CH_3$	$-C\equiv C-CH=CH_2$	2538	$-C(=O)CH_3$	$-CH_2C\equiv C$-3-Fur
2512	$-C(=O)CH_3$	$-C\equiv C-C(=CH_2)CH_3$	2539	$-C(=O)CH_3$	$-CH_2C\equiv C$-2-Imid
2513	$-C(=O)CH_3$	$-C\equiv C$-2-pyridyl	2540	$-C(=O)CH_3$	$-CH_2C\equiv C$-5-Imid
2514	$-C(=O)CH_3$	$-C\equiv C$-3-pyridyl	2541	$-C(=O)CH_3$	$-CH_2CH=CH_2$
2515	$-C(=O)CH_3$	$-C\equiv C$-2-Fur	2542	$-C(=O)CH_3$	$-CH_2CH=CH-CH_3$
2516	$-C(=O)CH_3$	$-C\equiv C$-3-Fur	2543	$-C(=O)CH_3$	$-CH_2CH=CH-CF_3$
2517	$-C(=O)CH_3$	$-C\equiv C$-2-Imid	2544	$-C(=O)CH_3$	$-CH_2CH=CH$-Et
2518	$-C(=O)CH_3$	$-C\equiv C$-5-Imid	2545	$-C(=O)CH_3$	$-CH_2CH=CH$-iPr
2519	$-C(=O)CH_3$	$-CH=CH-CH_3$	2546	$-C(=O)CH_3$	$-CH_2CH=CH$-cycPr
2520	$-C(=O)CH_3$	$-CH=CH-CF_3$	2547	$-C(=O)CH_3$	$-CH_2CH=CHCH=CH_2$
2521	$-C(=O)CH_3$	-CH=CH-Et	2548	$-C(=O)CH_3$	$-CH_2CH=C(CH_3)_2$
2522	$-C(=O)CH_3$	-CH=CH-iPr	2549	$-C(=O)CH_3$	$-CH_2CH=CH$-2-Fur
2523	$-C(=O)CH_3$	-CH=CH-cycPr	2550	$-C(=O)CH_3$	$-CH_2CH=CH$-3-Fur
2524	$-C(=O)CH_3$	$-CH=CH-CH=CH_2$	2551	$-C(=O)CH_3$	$-CH_2CH=CH$-2-Imid
2525	$-C(=O)CH_3$	-CH=CH-2-pyridyl	2552	$-C(=O)CH_3$	$-CH_2CH=CH$-5-Imid
2526	$-C(=O)CH_3$	-CH=CH-3-pyridyl	2553	$-C(=O)CH_3$	$-CH=CHCH_2$-cycPr
2527	$-C(=O)CH_3$	-CH=CH-2-Fur	2554	$-C(=O)CH_3$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2601	$-C(=O)CH_2CH_3$	n-butyl	2628	$-C(=O)CH_2CH_3$	-CH=CH-3-Fur
2602	$-C(=O)CH_2CH_3$	benzyl	2629	$-C(=O)CH_2CH_3$	-CH=CH-2-Imid
2603	$-C(=O)CH_2CH_3$	phenethyl	2630	$-C(=O)CH_2CH_3$	-CH=CH-5-Imid
2604	$-C(=O)CH_2CH_3$	$-CH_2CH_2$-cycPr	2631	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C-CH_3$
2605	$-C(=O)CH_2CH_3$	$-C\equiv C-CH_3$	2632	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C-CF_3$
2606	$-C(=O)CH_2CH_3$	$-C\equiv C-CF_3$	2633	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C$-Et
2607	$-C(=O)CH_2CH_3$	$-C\equiv C$-Et	2634	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C$-iPr
2608	$-C(=O)CH_2CH_3$	$-C\equiv C$-iPr	2635	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C$-cycPr
2609	$-C(=O)CH_2CH_3$	$-C\equiv C$-cycPr	2636	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C-CH=CH_2$
2610	$-C(=O)CH_2CH_3$	$-C\equiv C$-1-(Me)cycPr	2637	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C$-2-Fur
2611	$-C(=O)CH_2CH_3$	$-C\equiv C-CH=CH_2$	2638	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C$-3-Fur
2612	$-C(=O)CH_2CH_3$	$-C\equiv C-C(=CH_2)CH_3$	2639	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C$-2-Imid
2613	$-C(=O)CH_2CH_3$	$-C\equiv C$-2-pyridyl	2640	$-C(=O)CH_2CH_3$	$-CH_2C\equiv C$-5-Imid
2614	$-C(=O)CH_2CH_3$	$-C\equiv C$-3-pyridyl	2641	$-C(=O)CH_2CH_3$	$-CH_2CH=CH_2$
2615	$-C(=O)CH_2CH_3$	$-C\equiv C$-2-Fur	2642	$-C(=O)CH_2CH_3$	$-CH_2CH=CH-CH_3$
2616	$-C(=O)CH_2CH_3$	$-C\equiv C$-3-Fur	2643	$-C(=O)CH_2CH_3$	$-CH_2CH=CH-CF_3$
2617	$-C(=O)CH_2CH_3$	$-C\equiv C$-2-Imid	2644	$-C(=O)CH_2CH_3$	$-CH_2CH=CH$-Et
2618	$-C(=O)CH_2CH_3$	$-C\equiv C$-5-Imid	2645	$-C(=O)CH_2CH_3$	$-CH_2CH=CH$-iPr
2619	$-C(=O)CH_2CH_3$	$-CH=CH-CH_3$	2646	$-C(=O)CH_2CH_3$	$-CH_2CH=CH$-cycPr
2620	$-C(=O)CH_2CH_3$	$-CH=CH-CF_3$	2647	$-C(=O)CH_2CH_3$	$-CH_2CH=CHCH=CH_2$
2621	$-C(=O)CH_2CH_3$	-CH=CH-Et	2648	$-C(=O)CH_2CH_3$	$-CH_2CH=C(CH_3)_2$
2622	$-C(=O)CH_2CH_3$	-CH=CH-iPr	2649	$-C(=O)CH_2CH_3$	$-CH_2CH=CH$-2-Fur
2623	$-C(=O)CH_2CH_3$	-CH=CH-cycPr	2650	$-C(=O)CH_2CH_3$	$-CH_2CH=CH$-3-Fur
2624	$-C(=O)CH_2CH_3$	$-CH=CH-CH=CH_2$	2651	$-C(=O)CH_2CH_3$	$-CH_2CH=CH$-2-Imid
2625	$-C(=O)CH_2CH_3$	-CH=CH-2-pyridyl	2652	$-C(=O)CH_2CH_3$	$-CH_2CH=CH$-5-Imid
2626	$-C(=O)CH_2CH_3$	-CH=CH-3-pyridyl	2653	$-C(=O)CH_2CH_3$	$-CH=CHCH_2$-cycPr
2627	$-C(=O)CH_2CH_3$	-CH=CH-2-Fur	2654	$-C(=O)CH_2CH_3$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2701	$-C(=O)CH_2CH_2CH_3$	n-butyl	2728	$-C(=O)CH_2CH_2CH_3$	-CH=CH-3-Fur
2702	$-C(=O)CH_2CH_2CH_3$	benzyl	2729	$-C(=O)CH_2CH_2CH_3$	-CH=CH-2-Imid
2703	$-C(=O)CH_2CH_2CH_3$	phenethyl	2730	$-C(=O)CH_2CH_2CH_3$	-CH=CH-5-Imid
2704	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH_2$-cycPr	2731	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C-CH_3$
2705	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C-CH_3$	2732	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C-CF_3$
2706	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C-CF_3$	2733	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C$-Et
2707	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-Et	2734	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C$-iPr
2708	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-iPr	2735	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C$-cycPr
2709	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-cycPr	2736	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C-CH=CH_2$
2710	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C-1-(Me)$cycPr	2737	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C$-2-Fur
2711	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C-CH=CH_2$	2738	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C$-3-Fur
2712	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C-C(=CH_2)CH_3$	2739	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C$-2-Imid
2713	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-2-pyridyl	2740	$-C(=O)CH_2CH_2CH_3$	$-CH_2C\equiv C$-5-Imid
2714	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-3-pyridyl	2741	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH_2$
2715	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-2-Fur	2742	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH-CH_3$
2716	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-3-Fur	2743	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH-CF_3$
2717	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-2-Imid	2744	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH$-Et
2718	$-C(=O)CH_2CH_2CH_3$	$-C\equiv C$-5-Imid	2745	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH$-iPr
2719	$-C(=O)CH_2CH_2CH_3$	$-CH=CH-CH_3$	2746	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH$-cycPr
2720	$-C(=O)CH_2CH_2CH_3$	$-CH=CH-CF_3$	2747	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CHCH=CH_2$
2721	$-C(=O)CH_2CH_2CH_3$	-CH=CH-Et	2748	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=C(CH_3)_2$
2722	$-C(=O)CH_2CH_2CH_3$	-CH=CH-iPr	2749	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH$-2-Fur
2723	$-C(=O)CH_2CH_2CH_3$	-CH=CH-cycPr	2750	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH$-3-Fur
2724	$-C(=O)CH_2CH_2CH_3$	$-CH=CH-CH=CH_2$	2751	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH$-2-Imid
2725	$-C(=O)CH_2CH_2CH_3$	-CH=CH-2-pyridyl	2752	$-C(=O)CH_2CH_2CH_3$	$-CH_2CH=CH$-5-Imid
2726	$-C(=O)CH_2CH_2CH_3$	-CH=CH-3-pyridyl	2753	$-C(=O)CH_2CH_2CH_3$	$-CH=CHCH_2$-cycPr
2727	$-C(=O)CH_2CH_2CH_3$	-CH=CH-2-Fur	2754	$-C(=O)CH_2CH_2CH_3$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2801	$-C(=O)CH(CH_3)_2$	n-butyl	2828	$-C(=O)CH(CH_3)_2$	-CH=CH-3-Fur
2802	$-C(=O)CH(CH_3)_2$	benzyl	2829	$-C(=O)CH(CH_3)_2$	-CH=CH-2-Imid
2803	$-C(=O)CH(CH_3)_2$	phenethyl	2830	$-C(=O)CH(CH_3)_2$	-CH=CH-5-Imid
2804	$-C(=O)CH(CH_3)_2$	$-CH_2CH_2$-cycPr	2831	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C-CH_3$
2805	$-C(=O)CH(CH_3)_2$	$-C\equiv C-CH_3$	2832	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C-CF_3$
2806	$-C(=O)CH(CH_3)_2$	$-C\equiv C-CF_3$	2833	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C$-Et
2807	$-C(=O)CH(CH_3)_2$	-C≡C-Et	2834	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C$-iPr
2808	$-C(=O)CH(CH_3)_2$	-C≡C-iPr	2835	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C$-cycPr
2809	$-C(=O)CH(CH_3)_2$	-C≡C-cycPr	2836	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C-CH=CH_2$
2810	$-C(=O)CH(CH_3)_2$	-C≡C-1-(Me)cycPr	2837	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C$-2-Fur
2811	$-C(=O)CH(CH_3)_2$	$-C\equiv C-CH=CH_2$	2838	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C$-3-Fur
2812	$-C(=O)CH(CH_3)_2$	$-C\equiv C-C(=CH_2)CH_3$	2839	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C$-2-Imid
2813	$-C(=O)CH(CH_3)_2$	-C≡C-2-pyridyl	2840	$-C(=O)CH(CH_3)_2$	$-CH_2C\equiv C$-5-Imid
2814	$-C(=O)CH(CH_3)_2$	-C≡C-3-pyridyl	2841	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH_2$
2815	$-C(=O)CH(CH_3)_2$	-C≡C-2-Fur	2842	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH-CH_3$
2816	$-C(=O)CH(CH_3)_2$	-C≡C-3-Fur	2843	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH-CF_3$
2817	$-C(=O)CH(CH_3)_2$	-C≡C-2-Imid	2844	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH$-Et
2818	$-C(=O)CH(CH_3)_2$	-C≡C-5-Imid	2845	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH$-iPr
2819	$-C(=O)CH(CH_3)_2$	$-CH=CH-CH_3$	2846	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH$-cycPr
2820	$-C(=O)CH(CH_3)_2$	$-CH=CH-CF_3$	2847	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CHCH=CH_2$
2821	$-C(=O)CH(CH_3)_2$	-CH=CH-Et	2848	$-C(=O)CH(CH_3)_2$	$-CH_2CH=C(CH_3)_2$
2822	$-C(=O)CH(CH_3)_2$	-CH=CH-iPr	2849	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH$-2-Fur
2823	$-C(=O)CH(CH_3)_2$	-CH=CH-cycPr	2850	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH$-3-Fur
2824	$-C(=O)CH(CH_3)_2$	$-CH=CH-CH=CH_2$	2851	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH$-2-Imid
2825	$-C(=O)CH(CH_3)_2$	-CH=CH-2-pyridyl	2852	$-C(=O)CH(CH_3)_2$	$-CH_2CH=CH$-5-Imid
2826	$-C(=O)CH(CH_3)_2$	-CH=CH-3-pyridyl	2853	$-C(=O)CH(CH_3)_2$	$-CH=CHCH_2$-cycPr
2827	$-C(=O)CH(CH_3)_2$	-CH=CH-2-Fur	2854	$-C(=O)CH(CH_3)_2$	$-CH=CHCH_2$-2-Fur

Table 2 cont.

Ex.#	R^1	R^2	Ex.#	R^1	R^2
2901	-C(=O)cycPr	n-butyl	2928	-C(=O)cycPr	-CH=CH-3-Fur
2902	-C(=O)cycPr	benzyl	2929	-C(=O)cycPr	-CH=CH-2-Imid
2903	-C(=O)cycPr	phenethyl	2930	-C(=O)cycPr	-CH=CH-5-Imid
2904	-C(=O)cycPr	$-CH_2CH_2$-cycPr	2931	-C(=O)cycPr	$-CH_2C{\equiv}C-CH_3$
2905	-C(=O)cycPr	$-C{\equiv}C-CH_3$	2932	-C(=O)cycPr	$-CH_2C{\equiv}C-CF_3$
2906	-C(=O)cycPr	$-C{\equiv}C-CF_3$	2933	-C(=O)cycPr	$-CH_2C{\equiv}C$-Et
2907	-C(=O)cycPr	$-C{\equiv}C$-Et	2934	-C(=O)cycPr	$-CH_2C{\equiv}C$-iPr
2908	-C(=O)cycPr	$-C{\equiv}C$-iPr	2935	-C(=O)cycPr	$-CH_2C{\equiv}C$-cycPr
2909	-C(=O)cycPr	$-C{\equiv}C$-cycPr	2936	-C(=O)cycPr	$-CH_2C{\equiv}C-CH{=}CH_2$
2910	-C(=O)cycPr	$-C{\equiv}C$-1-(Me)cycPr	2937	-C(=O)cycPr	$-CH_2C{\equiv}C$-2-Fur
2911	-C(=O)cycPr	$-C{\equiv}C-CH{=}CH_2$	2938	-C(=O)cycPr	$-CH_2C{\equiv}C$-3-Fur
2912	-C(=O)cycPr	$-C{\equiv}C-C(=CH_2)CH_3$	2939	-C(=O)cycPr	$-CH_2C{\equiv}C$-2-Imid
2913	-C(=O)cycPr	$-C{\equiv}C$-2-pyridyl	2940	-C(=O)cycPr	$-CH_2C{\equiv}C$-5-Imid
2914	-C(=O)cycPr	$-C{\equiv}C$-3-pyridyl	2941	-C(=O)cycPr	$-CH_2CH{=}CH_2$
2915	-C(=O)cycPr	$-C{\equiv}C$-2-Fur	2942	-C(=O)cycPr	$-CH_2CH{=}CH-CH_3$
2916	-C(=O)cycPr	$-C{\equiv}C$-3-Fur	2943	-C(=O)cycPr	$-CH_2CH{=}CH-CF_3$
2917	-C(=O)cycPr	$-C{\equiv}C$-2-Imid	2944	-C(=O)cycPr	$-CH_2CH{=}CH$-Et
2918	-C(=O)cycPr	$-C{\equiv}C$-5-Imid	2945	-C(=O)cycPr	$-CH_2CH{=}CH$-iPr
2919	-C(=O)cycPr	$-CH{=}CH-CH_3$	2946	-C(=O)cycPr	$-CH_2CH{=}CH$-cycPr
2920	-C(=O)cycPr	$-CH{=}CH-CF_3$	2947	-C(=O)cycPr	$-CH_2CH{=}CHCH{=}CH_2$
2921	-C(=O)cycPr	$-CH{=}CH$-Et	2948	-C(=O)cycPr	$-CH_2CH{=}C(CH_3)_2$
2922	-C(=O)cycPr	$-CH{=}CH$-iPr	2949	-C(=O)cycPr	$-CH_2CH{=}CH$-2-Fur
2923	-C(=O)cycPr	$-CH{=}CH$-cycPr	2950	-C(=O)cycPr	$-CH_2CH{=}CH$-3-Fur
2924	-C(=O)cycPr	$-CH{=}CH-CH{=}CH_2$	2951	-C(=O)cycPr	$-CH_2CH{=}CH$-2-Imid
2925	-C(=O)cycPr	$-CH{=}CH$-2-pyridyl	2952	-C(=O)cycPr	$-CH_2CH{=}CH$-5-Imid
2926	-C(=O)cycPr	$-CH{=}CH$-3-pyridyl	2953	-C(=O)cycPr	$-CH{=}CHCH_2$-cycPr
2927	-C(=O)cycPr	$-CH{=}CH$-2-Fur	2954	-C(=O)cycPr	$-CH{=}CHCH_2$-2-Fur

*Unless otherwise noted, stereochemistry is (+/-) and in R^2 all double bonds are trans.

Table 3

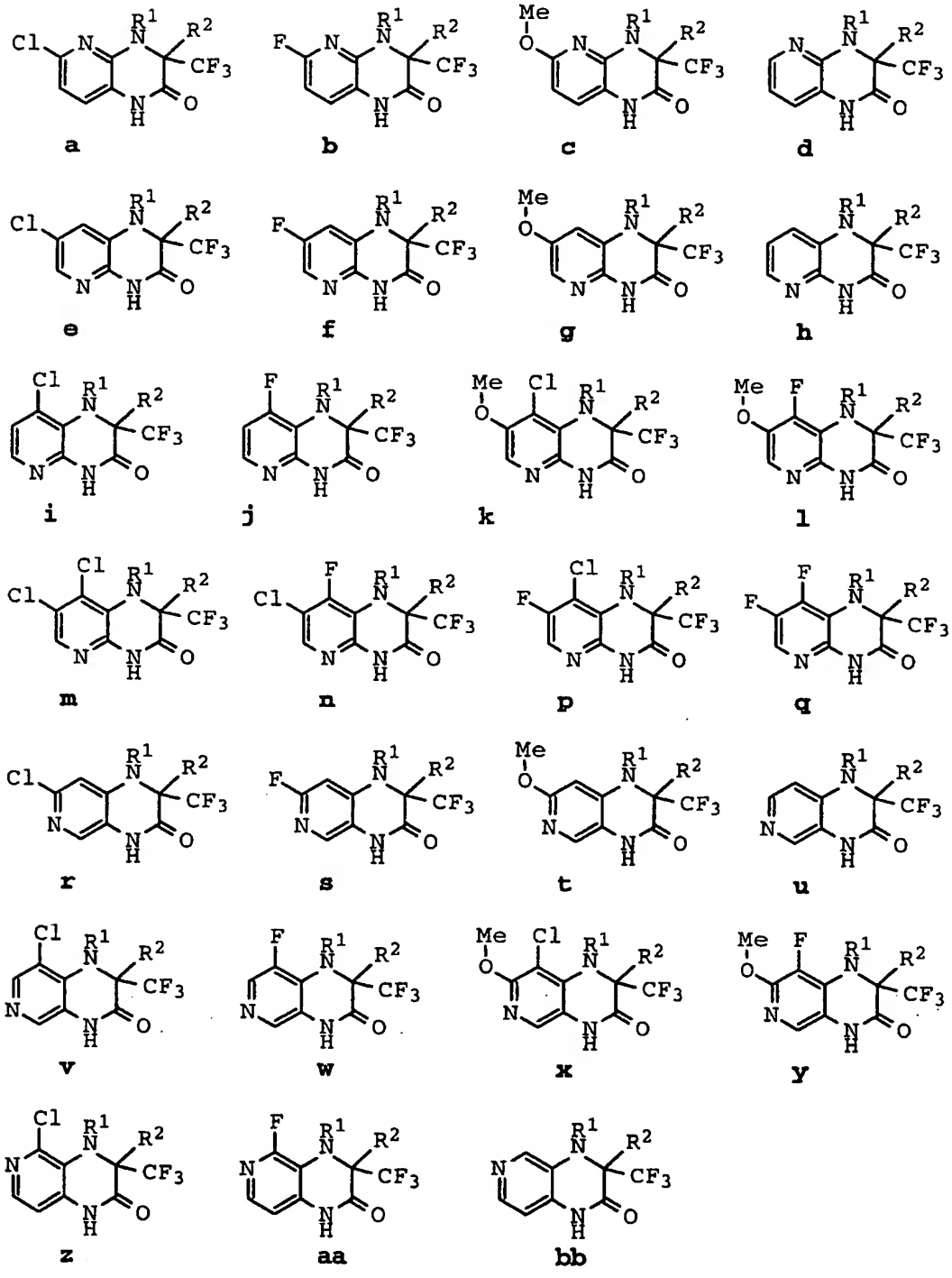


Table 3 cont.

Ex.#	R^1	R^2
4001	$-CH_2-CH=CH_2$	n-butyl
4002	$-CH_2-CH=CH_2$	benzyl
4003	$-CH_2-CH=CH_2$	phenethyl
4004	$-CH_2-CH=CH_2$	$-CH_2CH_2$-cycPr
4005	$-CH_2-CH=CH_2$	$-C\equiv C-CH_3$
4006	$-CH_2-CH=CH_2$	$-C\equiv C-CF_3$
4007	$-CH_2-CH=CH_2$	$-C\equiv C$-Et
4008	$-CH_2-CH=CH_2$	$-C\equiv C$-iPr
4009	$-CH_2-CH=CH_2$	$-C\equiv C$-cycPr
4010	$-CH_2-CH=CH_2$	$-C\equiv C$-1-(Me)cycPr
4011	$-CH_2-CH=CH_2$	$-C\equiv C-CH=CH_2$
4012	$-CH_2-CH=CH_2$	$-CH=CH-CH_3$
4013	$-CH_2-CH=CH_2$	$-CH=CH-CF_3$
4014	$-CH_2-CH=CH_2$	$-CH=CH$-Et
4015	$-CH_2-CH=CH_2$	$-CH=CH$-iPr
4016	$-CH_2-CH=CH_2$	$-CH=CH$-cycPr
4017	$-CH_2-CH=CH_2$	$-CH=CH-CH=CH_2$
4018	$-CH_2-CH=CH_2$	$-CH_2-C\equiv C-CH_3$
4019	$-CH_2-CH=CH_2$	$-CH_2-C\equiv C-CF_3$
4020	$-CH_2-CH=CH_2$	$-CH_2-C\equiv C$-Et
4021	$-CH_2-CH=CH_2$	$-CH_2-C\equiv C$-iPr
4022	$-CH_2-CH=CH_2$	$-CH_2-C\equiv C$-cycPr
4023	$-CH_2-CH=CH_2$	$-CH_2-C\equiv C-CH=CH_2$
4024	$-CH_2-CH=CH_2$	$-CH_2-CH=CH_2$
4025	$-CH_2-CH=CH_2$	$-CH_2-CH=CH-CH_3$
4026	$-CH_2-CH=CH_2$	$-CH_2-CH=CH-CF_3$
4027	$-CH_2-CH=CH_2$	$-CH_2-CH=CH$-Et
4028	$-CH_2-CH=CH_2$	$-CH_2-CH=CH$-iPr
4029	$-CH_2-CH=CH_2$	$-CH_2-CH=CH$-cycPr
4030	$-CH_2-CH=CH_2$	$-CH_2-CH=CH-CH=CH_2$
4031	$-CH_2-CH=CH_2$	$-CH_2-CH=C(CH_3)_2$

4032	$-CH_2-CH=CH_2$	$-CH=CH-CH_2$-cycPr
4033	$-CH_2-CH=CH_2$	n-butyl
4034	$-CH_2$-cycPr	benzyl
4035	$-CH_2$-cycPr	phenethyl
4036	$-CH_2$-cycPr	$-CH_2CH_2$-cycPr
4037	$-CH_2$-cycPr	$-C\equiv C-CH_3$
4038	$-CH_2$-cycPr	$-C\equiv C-CF_3$
4039	$-CH_2$-cycPr	-C≡C-Et
4040	$-CH_2$-cycPr	-C≡C-iPr
4041	$-CH_2$-cycPr	-C≡C-cycPr
4042	$-CH_2$-cycPr	-C≡C-1-(Me)cycPr
4043	$-CH_2$-cycPr	$-C\equiv C-CH=CH_2$
4044	$-CH_2$-cycPr	$-CH=CH-CH_3$
4045	$-CH_2$-cycPr	$-CH=CH-CF_3$
4046	$-CH_2$-cycPr	-CH=CH-Et
4047	$-CH_2$-cycPr	-CH=CH-iPr
4048	$-CH_2$-cycPr	-CH=CH-cycPr
4049	$-CH_2$-cycPr	$-CH=CH-CH=CH_2$
4050	$-CH_2$-cycPr	$-CH_2-C\equiv C-CH_3$
4051	$-CH_2$-cycPr	$-CH_2-C\equiv C-CF_3$
4052	$-CH_2$-cycPr	$-CH_2-C\equiv C$-Et
4053	$-CH_2$-cycPr	$-CH_2-C\equiv C$-iPr
4054	$-CH_2$-cycPr	$-CH_2-C\equiv C$-cycPr
4055	$-CH_2$-cycPr	$-CH_2-C\equiv C-CH=CH_2$
4056	$-CH_2$-cycPr	$-CH_2-CH=CH_2$
4057	$-CH_2$-cycPr	$-CH_2-CH=CH-CH_3$
4058	$-CH_2$-cycPr	$-CH_2-CH=CH-CF_3$
4059	$-CH_2$-cycPr	$-CH_2-CH=CH$-Et
4060	$-CH_2$-cycPr	$-CH_2-CH=CH$-iPr
4061	$-CH_2$-cycPr	$-CH_2-CH=CH$-cycPr
4062	$-CH_2$-cycPr	$-CH_2-CH=CH-CH=CH_2$
4063	$-CH_2$-cycPr	$-CH_2-CH=C(CH_3)_2$
4064	$-CH_2$-cycPr	$-CH=CH-CH_2$-cycPr
4065	$-CO_2CH_2CH_3$	n-butyl

4066	$-CO_2CH_2CH_3$	benzyl
4067	$-CO_2CH_2CH_3$	phenethyl
4068	$-CO_2CH_2CH_3$	$-CH_2CH_2$-cycPr
4069	$-CO_2CH_2CH_3$	$-C\equiv C-CH_3$
4070	$-CO_2CH_2CH_3$	$-C\equiv C-CF_3$
4071	$-CO_2CH_2CH_3$	$-C\equiv C$-Et
4072	$-CO_2CH_2CH_3$	$-C\equiv C$-iPr
4073	$-CO_2CH_2CH_3$	$-C\equiv C$-cycPr
4074	$-CO_2CH_2CH_3$	$-C\equiv C$-1-(Me)cycPr
4075	$-CO_2CH_2CH_3$	$-C\equiv C-CH=CH_2$
4076	$-CO_2CH_2CH_3$	$-CH=CH-CH_3$
4077	$-CO_2CH_2CH_3$	$-CH=CH-CF_3$
4078	$-CO_2CH_2CH_3$	$-CH=CH$-Et
4079	$-CO_2CH_2CH_3$	$-CH=CH$-iPr
4080	$-CO_2CH_2CH_3$	$-CH=CH$-cycPr
4081	$-CO_2CH_2CH_3$	$-CH=CH-CH=CH_2$
4082	$-CO_2CH_2CH_3$	$-CH_2-C\equiv C-CH_3$
4083	$-CO_2CH_2CH_3$	$-CH_2-C\equiv C-CF_3$
4084	$-CO_2CH_2CH_3$	$-CH_2-C\equiv C$-Et
4085	$-CO_2CH_2CH_3$	$-CH_2-C\equiv C$-iPr
4086	$-CO_2CH_2CH_3$	$-CH_2-C\equiv C$-cycPr
4087	$-CO_2CH_2CH_3$	$-CH_2-C\equiv C-CH=CH_2$
4088	$-CO_2CH_2CH_3$	$-CH_2-CH=CH_2$
4089	$-CO_2CH_2CH_3$	$-CH_2-CH=CH-CH_3$
4090	$-CO_2CH_2CH_3$	$-CH_2-CH=CH-CF_3$
4091	$-CO_2CH_2CH_3$	$-CH_2-CH=CH$-Et
4092	$-CO_2CH_2CH_3$	$-CH_2-CH=CH$-iPr
4093	$-CO_2CH_2CH_3$	$-CH_2-CH=CH$-cycPr
4094	$-CO_2CH_2CH_3$	$-CH_2-CH=CH-CH=CH_2$
4095	$-CO_2CH_2CH_3$	$-CH_2-CH=C(CH_3)_2$
4096	$-CO_2CH_2CH_3$	$-CH=CH-CH_2$-cycPr
4097	$-CO_2CH(CH_3)_2$	n-butyl
4098	$-CO_2CH(CH_3)_2$	benzyl
4099	$-CO_2CH(CH_3)_2$	phenethyl

4101	$-CO_2CH(CH_3)_2$	$-CH_2CH_2$-cycPr
4102	$-CO_2CH(CH_3)_2$	$-C\equiv C-CH_3$
4103	$-CO_2CH(CH_3)_2$	$-C\equiv C-CF_3$
4104	$-CO_2CH(CH_3)_2$	$-C\equiv C$-Et
4105	$-CO_2CH(CH_3)_2$	$-C\equiv C$-iPr
4106	$-CO_2CH(CH_3)_2$	$-C\equiv C$-cycPr
4107	$-CO_2CH(CH_3)_2$	$-C\equiv C$-1-(Me)cycPr
4108	$-CO_2CH(CH_3)_2$	$-C\equiv C-CH=CH_2$
4109	$-CO_2CH(CH_3)_2$	$-CH=CH-CH_3$
4110	$-CO_2CH(CH_3)_2$	$-CH=CH-CF_3$
4111	$-CO_2CH(CH_3)_2$	$-CH=CH$-Et
4112	$-CO_2CH(CH_3)_2$	$-CH=CH$-iPr
4113	$-CO_2CH(CH_3)_2$	$-CH=CH$-cycPr
4114	$-CO_2CH(CH_3)_2$	$-CH=CH-CH=CH_2$
4115	$-CO_2CH(CH_3)_2$	$-CH_2-C\equiv C-CH_3$
4116	$-CO_2CH(CH_3)_2$	$-CH_2-C\equiv C-CF_3$
4117	$-CO_2CH(CH_3)_2$	$-CH_2-C\equiv C$-Et
4118	$-CO_2CH(CH_3)_2$	$-CH_2-C\equiv C$-iPr
4119	$-CO_2CH(CH_3)_2$	$-CH_2-C\equiv C$-cycPr
4120	$-CO_2CH(CH_3)_2$	$-CH_2-C\equiv C-CH=CH_2$
4121	$-CO_2CH(CH_3)_2$	$-CH_2-CH=CH_2$
4122	$-CO_2CH(CH_3)_2$	$-CH_2-CH=CH-CH_3$
4123	$-CO_2CH(CH_3)_2$	$-CH_2-CH=CH-CF_3$
4124	$-CO_2CH(CH_3)_2$	$-CH_2-CH=CH$-Et
4125	$-CO_2CH(CH_3)_2$	$-CH_2-CH=CH$-iPr
4126	$-CO_2CH(CH_3)_2$	$-CH_2-CH=CH$-cycPr
4127	$-CO_2CH(CH_3)_2$	$-CH_2-CH=CH-CH=CH_2$
4128	$-CO_2CH(CH_3)_2$	$-CH_2-CH=C(CH_3)_2$
4129	$-CO_2CH(CH_3)_2$	$-CH=CH-CH_2$-cycPr
4130	$-CO_2C(=CH_2)CH_3$	n-butyl
4131	$-CO_2C(=CH_2)CH_3$	benzyl
4132	$-CO_2C(=CH_2)CH_3$	phenethyl
4133	$-CO_2C(=CH_2)CH_3$	$-CH_2CH_2$-cycPr
4134	$-CO_2C(=CH_2)CH_3$	$-C\equiv C-CH_3$

4135	$-CO_2C(=CH_2)CH_3$	$-C\equiv C-CF_3$
4136	$-CO_2C(=CH_2)CH_3$	$-C\equiv C-Et$
4137	$-CO_2C(=CH_2)CH_3$	$-C\equiv C-iPr$
4138	$-CO_2C(=CH_2)CH_3$	$-C\equiv C-cycPr$
4139	$-CO_2C(=CH_2)CH_3$	$-C\equiv C-1-(Me)cycPr$
4140	$-CO_2C(=CH_2)CH_3$	$-C\equiv C-CH=CH_2$
4141	$-CO_2C(=CH_2)CH_3$	$-CH=CH-CH_3$
4142	$-CO_2C(=CH_2)CH_3$	$-CH=CH-CF_3$
4143	$-CO_2C(=CH_2)CH_3$	$-CH=CH-Et$
4144	$-CO_2C(=CH_2)CH_3$	$-CH=CH-iPr$
4145	$-CO_2C(=CH_2)CH_3$	$-CH=CH-cycPr$
4146	$-CO_2C(=CH_2)CH_3$	$-CH=CH-CH=CH_2$
4147	$-CO_2C(=CH_2)CH_3$	$-CH_2-C\equiv C-CH_3$
4148	$-CO_2C(=CH_2)CH_3$	$-CH_2-C\equiv C-CF_3$
4149	$-CO_2C(=CH_2)CH_3$	$-CH_2-C\equiv C-Et$
4150	$-CO_2C(=CH_2)CH_3$	$-CH_2-C\equiv C-iPr$
4151	$-CO_2C(=CH_2)CH_3$	$-CH_2-C\equiv C-cycPr$
4152	$-CO_2C(=CH_2)CH_3$	$-CH_2-C\equiv C-CH=CH_2$
4153	$-CO_2C(=CH_2)CH_3$	$-CH_2-CH=CH_2$
4154	$-CO_2C(=CH_2)CH_3$	$-CH_2-CH=CH-CH_3$
4155	$-CO_2C(=CH_2)CH_3$	$-CH_2-CH=CH-CF_3$
4156	$-CO_2C(=CH_2)CH_3$	$-CH_2-CH=CH-Et$
4157	$-CO_2C(=CH_2)CH_3$	$-CH_2-CH=CH-iPr$
4158	$-CO_2C(=CH_2)CH_3$	$-CH_2-CH=CH-cycPr$
4159	$-CO_2C(=CH_2)CH_3$	$-CH_2-CH=CH-CH=CH_2$
4160	$-CO_2C(=CH_2)CH_3$	$-CH_2-CH=C(CH_3)_2$
4161	$-CO_2C(=CH_2)CH_3$	$-CH=CH-CH_2-cycPr$
4162	$-C(=O)-cycPr$	n-butyl
4163	$-C(=O)-cycPr$	benzyl
4164	$-C(=O)-cycPr$	phenethyl
4165	$-C(=O)-cycPr$	$-CH_2CH_2-cycPr$
4166	$-C(=O)-cycPr$	$-C\equiv C-CH_3$
4167	$-C(=O)-cycPr$	$-C\equiv C-CF_3$
4168	$-C(=O)-cycPr$	$-C\equiv C-Et$

4169	-C(=O)-cycPr	-C≡C-iPr
4170	-C(=O)-cycPr	-C≡C-cycPr
4171	-C(=O)-cycPr	-C≡C-1-(Me)cycPr
4172	-C(=O)-cycPr	$-C\equiv C-CH=CH_2$
4173	-C(=O)-cycPr	$-CH=CH-CH_3$
4174	-C(=O)-cycPr	$-CH=CH-CF_3$
4175	-C(=O)-cycPr	-CH=CH-Et
4176	-C(=O)-cycPr	-CH=CH-iPr
4177	-C(=O)-cycPr	-CH=CH-cycPr
4178	-C(=O)-cycPr	$-CH=CH-CH=CH_2$
4179	-C(=O)-cycPr	$-CH_2-C\equiv C-CH_3$
4180	-C(=O)-cycPr	$-CH_2-C\equiv C-CF_3$
4181	-C(=O)-cycPr	$-CH_2-C\equiv C-Et$
4182	-C(=O)-cycPr	$-CH_2-C\equiv C-iPr$
4183	-C(=O)-cycPr	$-CH_2-C\equiv C-cycPr$
4184	-C(=O)-cycPr	$-CH_2-C\equiv C-CH=CH_2$
4185	-C(=O)-cycPr	$-CH_2-CH=CH_2$
4186	-C(=O)-cycPr	$-CH_2-CH=CH-CH_3$
4187	-C(=O)-cycPr	$-CH_2-CH=CH-CF_3$
4188	-C(=O)-cycPr	$-CH_2-CH=CH-Et$
4189	-C(=O)-cycPr	$-CH_2-CH=CH-iPr$
4190	-C(=O)-cycPr	$-CH_2-CH=CH-cycPr$
4191	-C(=O)-cycPr	$-CH_2-CH=CH-CH=CH_2$
4192	-C(=O)-cycPr	$-CH_2-CH=C(CH_3)_2$
4193	-C(=O)-cycPr	$-CH=CH-CH_2-cycPr$

*Unless otherwise noted, stereochemistry is (+/-) and in R^2, all double bonds are trans.

Utility

The compounds of this invention possess reverse transcriptase inhibitory activity, in particular, HIV inhibitory efficacy. The compounds of formula (I) possess HIV reverse transcriptase inhibitory activity and are therefore useful as antiviral agents for the treatment of HIV infection and associated diseases. The compounds of formula (I) possess HIV reverse transcriptase inhibitory activity and are effective as inhibitors of HIV growth. The ability of the compounds of the present invention to inhibit viral growth or infectivity is demonstrated in standard assay of viral growth or infectivity, for example, using the assay described below.

The compounds of formula (I) of the present invention are also useful for the inhibition of HIV in an *ex vivo* sample containing HIV or expected to be exposed to HIV. Thus, the compounds of the present invention may be used to inhibit HIV present in a body fluid sample (for example, a serum or semen sample) which contains or is suspected to contain or be exposed to HIV.

The compounds provided by this invention are also useful as standard or reference compounds for use in tests or assays for determining the ability of an agent to inhibit viral clone replication and/or HIV reverse transcriptase, for example in a pharmaceutical research program. Thus, the compounds of the present invention may be used as a control or reference compound in such assays and as a quality control standard. The compounds of the present invention may be provided in a commercial kit or container for use as such standard or reference compound.

Since the compounds of the present invention exhibit specificity for HIV reverse transcriptase, the compounds of the present invention may also be useful as diagnostic reagents in diagnostic assays for the detection of HIV reverse transcriptase. Thus, inhibition of the reverse transcriptase activity in an assay (such as the assays described herein) by a compound of the present invention

would be indicative of the presence of HIV reverse transcriptase and HIV virus.

As used herein "µg" denotes microgram, "mg" denotes milligram, "g" denotes gram, "µL" denotes microliter, "mL" denotes milliliter, "L" denotes liter, "nM" denotes nanomolar, "µM" denotes micromolar, "mM" denotes millimolar, "M" denotes molar and "nm" denotes nanometer. "Sigma" stands for the Sigma-Aldrich Corp. of St. Louis, MO.

HIV RNA Assay

DNA Plasmids and *in vitro* RNA transcripts:

Plasmid pDAB 72 containing both gag and pol sequences of BH10 (bp 113-1816) cloned into PTZ 19R was prepared according to Erickson-Viitanen et al. *AIDS Research and Human Retroviruses* **1989**, *5*, 577. The plasmid was linearized with Bam HI prior to the generation of *in vitro* RNA transcripts using the Riboprobe Gemini system II kit (Promega) with T7 RNA polymerase. Synthesized RNA was purified by treatment with RNase free DNAse (Promega), phenol-chloroform extraction, and ethanol precipitation. RNA transcripts were dissolved in water, and stored at -70°C. The concentration of RNA was determined from the A_{260}.

Probes:

Biotinylated capture probes were purified by HPLC after synthesis on an Applied Biosystems (Foster City, CA) DNA synthesizer by addition of biotin to the 5' terminal end of the oligonucleotide, using the biotin-phosphoramidite reagent of Cocuzza, *Tet. Lett.* **1989**, *30*, 6287. The gag biotinylated capture probe (5-biotin-CTAGCTCCCTGCTTGCCCATACTA 3') was complementary to nucleotides 889-912 of HXB2 and the pol biotinylated capture probe (5'-biotin -CCCTATCATTTTTGGTTTCCAT 3') was complementary to nucleotides 2374-2395 of HXB2. Alkaline phosphatase conjugated oligonucleotides used as reporter probes were prepared by Syngene (San Diego, CA.). The pol reporter probe (5' CTGTCTTACTTTGATAAAACCTC 3') was complementary to nucleotides 2403-2425 of HXB2. The gag

reporter probe (5' CCCAGTATTTGTCTACAGCCTTCT 3') was complementary to nucleotides 950-973 of HXB2. All nucleotide positions are those of the GenBank Genetic Sequence Data Bank as accessed through the Genetics Computer Group Sequence Analysis Software Package (Devereau *Nucleic Acids Research* **1984**, *12*, 387). The reporter probes were prepared as 0.5 µM stocks in 2 x SSC (0.3 M NaCl, 0.03 M sodium citrate), 0.05 M Tris pH 8.8, 1 mg/mL BSA. The biotinylated capture probes were prepared as 100 µM stocks in water.

Streptavidin coated plates:

Streptavidin coated plates were obtained from Du Pont Biotechnology Systems (Boston, MA).

Cells and virus stocks:

MT-2 and MT-4 cells were maintained in RPMI 1640 supplemented with 5% fetal calf serum (FCS) for MT-2 cells or 10% FCS for MT-4 cells, 2 mM L-glutamine and 50 µg/mL gentamycin, all from Gibco. HIV-1 RF was propagated in MT-4 cells in the same medium. Virus stocks were prepared approximately 10 days after acute infection of MT-4 cells and stored as aliquots at -70°C. Infectious titers of HIV-1(RF) stocks were 1-3 x 10^7 PFU (plaque forming units)/mL as measured by plaque assay on MT-2 cells (see below). Each aliquot of virus stock used for infection was thawed only once.

For evaluation of antiviral efficacy, cells to be infected were subcultured one day prior to infection. On the day of infection, cells were resuspended at 5 x 10^5 cells/mL in RPMI 1640, 5% FCS for bulk infections or at 2 x 10^6/mL in Dulbecco's modified Eagles medium with 5% FCS for infection in microtiter plates. Virus was added and culture continued for 3 days at 37°C.

HIV RNA assay:

Cell lysates or purified RNA in 3 M or 5 M GED were mixed with 5 M GED and capture probe to a final guanidinium isothiocyanate concentration of 3 M and a final biotin

oligonucleotide concentration of 30 nM. Hybridization was carried out in sealed U bottom 96 well tissue culture plates (Nunc or Costar) for 16-20 hours at 37°C. RNA hybridization reactions were diluted three-fold with deionized water to a final guanidinium isothiocyanate concentration of 1 M and aliquots (150 µL) were transferred to streptavidin coated microtiter plates wells. Binding of capture probe and capture probe-RNA hybrid to the immobilized streptavidin was allowed to proceed for 2 hours at room temperature, after which the plates were washed 6 times with DuPont ELISA plate wash buffer (phosphate buffered saline(PBS), 0.05% Tween 20.) A second hybridization of reporter probe to the immobilized complex of capture probe and hybridized target RNA was carried out in the washed streptavidin coated well by addition of 120 µl of a hybridization cocktail containing 4 X SSC, 0.66% Triton X 100, 6.66% deionized formamide, 1 mg/mL BSA and 5 nM reporter probe. After hybridization for one hour at 37°C, the plate was again washed 6 times. Immobilized alkaline phosphatase activity was detected by addition of 100 µL of 0.2 mM 4-methylumbelliferyl phosphate (MUBP, JBL Scientific) in buffer δ (2.5 M diethanolamine pH 8.9 (JBL Scientific), 10 mM $MgCl_2$, 5 mM zinc acetate dihydrate and 5 mM *N*-hydroxyethyl-ethylene-diamine-triacetic acid). The plates were incubated at 37°C. Fluorescence at 450 nM was measured using a microplate fluorometer (Dynateck) exciting at 365 nM.

Microplate based compound evaluation in HIV-1 infected MT-2 cells:

Compounds to be evaluated were dissolved in DMSO and diluted in culture medium to twice the highest concentration to be tested and a maximum DMSO concentration of 2%. Further three-fold serial dilutions of the compound in culture medium were performed directly in U bottom microtiter plates (Nunc). After compound dilution, MT-2 cells (50 µL) were added to a final concentration of 5×10^5 per mL (1×10^5 per well). Cells were incubated with compounds for 30 minutes at 37°C in a CO_2 incubator. For evaluation of antiviral potency, an

appropriate dilution of HIV-1 (RF) virus stock (50 µL) was added to culture wells containing cells and dilutions of the test compounds. The final volume in each well was 200 µL. Eight wells per plate were left uninfected with 50 µL of medium added in place of virus, while eight wells were infected in the absence of any antiviral compound. For evaluation of compound toxicity, parallel plates were cultured without virus infection.

After 3 days of culture at 37°C in a humidified chamber inside a CO_2 incubator, all but 25 µL of medium/well was removed from the HIV infected plates. Thirty seven µL of 5 M GED containing biotinylated capture probe was added to the settled cells and remaining medium in each well to a final concentration of 3 M GED and 30 nM capture probe. Hybridization of the capture probe to HIV RNA in the cell lysate was carried out in the same microplate well used for virus culture by sealing the plate with a plate sealer (Costar), and incubating for 16-20 hrs in a 37°C incubator. Distilled water was then added to each well to dilute the hybridization reaction three-fold and 150 µL of this diluted mixture was transferred to a streptavidin coated microtiter plate. HIV RNA was quantitated as described above. A standard curve, prepared by adding known amounts of pDAB 72 *in vitro* RNA transcript to wells containing lysed uninfected cells, was run on each microtiter plate in order to determine the amount of viral RNA made during the infection.

In order to standardize the virus inoculum used in the evaluation of compounds for antiviral activity, dilutions of virus were selected which resulted in an IC_{90} value (concentration of compound required to reduce the HIV RNA level by 90%) for dideoxycytidine (ddC) of 0.2 µg/mL. IC_{90} values of other antiviral compounds, both more and less potent than ddC, were reproducible using several stocks of HIV-1 (RF) when this procedure was followed. This concentration of virus corresponded to ~3 x 10^5 PFU (measured by plaque assay on MT-2 cells) per assay well and typically produced approximately 75% of the maximum viral RNA level achievable at any virus inoculum. For the HIV RNA assay, IC_{90}

values were determined from the percent reduction of net signal (signal from infected cell samples minus signal from uninfected cell samples) in the RNA assay relative to the net signal from infected, untreated cells on the same culture plate (average of eight wells). Valid performance of individual infection and RNA assay tests was judged according to three criteria. It was required that the virus infection should result in an RNA assay signal equal to or greater than the signal generated from 2 ng of pDAB 72 *in vitro* RNA transcript. The IC_{90} for ddC, determined in each assay run, should be between 0.1 and 0.3 µg/mL. Finally, the plateau level of viral RNA produced by an effective reverse transcriptase inhibitor should be less than 10% of the level achieved in an uninhibited infection. A compound was considered active if its IC_{90} was found to be less than 20µM. Compounds of the present invention have been found to have an IC_{90} less than 20µM.

For antiviral potency tests, all manipulations in microtiter plates, following the initial addition of 2X concentrated compound solution to a single row of wells, were performed using a Perkin Elmer/Cetus ProPette.

HIV-1 RT Assay Materials and Methods

This assay measures HIV-1 RT RNA dependent DNA polymerase activity by the incorporation of 3H dTMP onto the template primer Poly (rA) oligo (dT)12-18. The template primer containing the incorporated radioactivity was separated from unincorporated label by one of two methods:

Method 1. The template primer was precipitated with TCA, collected on glass fiber filters and counted for radioactivity with a scintillation counter.

Method 2. The currently used method is more rapid and convenient. The template primer is captured on an diethyl amino ethyl (DEAE) ion exchange membrane which is then counted for radioactivity after washing off the free nucleotide.

Materials and Reagents:

The template primer Poly (rA) oligo (dT)12-18 and dTTP were purchased from Pharmacia Biotech. The template primer and nucleotide were dissolved in diethyl pyrocarbonate water to a concentration of 1 mg/ml and 5.8 mM respectively. The substrates were aliquoted (template primer at 20 µl/aliquot, dTTP at 9 µl/aliquot) and frozen at -20 C.

The 3H dTTP (2.5 mCi/ml in 10 mM Tricine at pH 7.6; specific activity of 90-120 Ci/mmol) and the recombinant HIV-1 Reverse Transcriptase (HxB2 background; 100 U/10 µl in 100 mM potassium phosphate at pH 7.1, 1 mM dithiothreitol and 50% glycerol) were purchased from DuPont NEN. 1 Unit of enzyme is defined by DuPont NEN as the amount required to incorporate 1 nmol of labelled dTTP into acid-insoluble material in 10 minutes at 37 C. The 3H dTTP was aliquoted at 23.2 µl/microfuge tube (58 µCi) and frozen at -20 C. The HIV-1 Reverse Transcriptase (RT) was diluted 10 fold with RT buffer (80 mM KCl, 50 mM Tris HCl, 12 mM MgCl2, 1 mM DTT, 50 µM EGTA, 5 mg/ml BSA, 0.01% Triton-X 100, pH 8.2) and aliquoted at 10 µl/microfuge tube (10 Units/10 µl). One aliquot (enough for 8 assays) was diluted further to 10 Units/100 µl and aliquoted into 8 tubes (1.25 Units/12.5 µl). All aliquots were frozen at -70 C.

The Millipore Multiscreen DE 96 well filter plates, multiscreen plate adaptors, and microplate press-on adhesive sealing film were purchased from Millipore. The filter plate containing 0.65 µm pore size diethyl amino ethyl cellulose (DEAE) paper disks was pretreated with 0.3 M ammonium formate and 10 mM sodium pyrophosphate (2 times 200 µl /well) at pH 8.0 prior to use. A Skatron 96 well cell harvester and glass fiber filter mats were purchased from Skatron Instruments. Microscint 20 scintillation cocktail was purchased from Packard. Beckman Ready Flow III scintillation cocktail was purchased from Beckman.

HIV-1 RT Assay:

The enzyme and substrate mixture were freshly prepared from the above stock solutions. 1.25 Units of enzyme was

diluted with RT buffer (containing 5 mg/ml BSA) to a concentration of 0.05 Units/10 µl or 0.7 nM. Final enzyme and BSA concentrations in the assay were 0.01 Units or 0.14 nM and 1 mg/ml respectively. The inhibitor and substrate mixture were diluted with RT buffer containing no BSA. All inhibitors were dissolved in dimethyl sulfoxide (DMSO) at a stock concentration of 3 mM and stored at -20 C after use. A Biomek robot was used to dilute the inhibitors in a 96 well plate. Inhibitors were initially diluted 96 fold from stock and then serially diluted two times (10 fold/dilution) from 31.25 µM to 3125 nM and 312.5 nM. Depending on the potency of the inhibitor, one of the three dilutions was further diluted. Typically the highest concentration (31.25 µM) was serially diluted three times at 5 fold/dilution to 6.25, 1.25, and 0.25 µM. Final inhibitor concentrations in the assay were 12.5, 2.5, 0.5, and 0.1 µM. For potent inhibitors of HIV-1 RT, the final inhibitor concentrations used were 0.1 or 0.01 that stated above. The substrate mixture contained 6.25 µg/ml of Poly (rA) oligo (dT)12-18 and 12.5 µM of dTTP (58 µCi 3H dTTP). The final substrate concentrations were 2.5 µg/ml and 5 µM respectively.

Using the Beckman Instruments Biomek robot, 10 µl of HIV-1 RT was combined with 20 µl of inhibitor in a 96 well U bottom plate. The enzyme and inhibitor were preincubated at ambient temperature for 6 minutes. 20 µl of the substrate mixture was added to each well to initiate the reaction (total volume was 50 µl). The reactions were incubated at 37 C and terminated after 45 minutes.

For method 1, 200 µl of an ice-cold solution of 13% trichloroacetic acid (TCA) and 10 mM sodium pyrophosphate was added to each of the 96 wells. The 96 well plate was then placed in an ice-water bath for 30 minutes. Using A Skatron 96 well cell harvester, the acid precipitable material was collected on a glass fiber filter mat that had been presoaked in 13% TCA and 10 mM sodium pyrophosphate. The filter disks were washed 3 times (2.0 ml/wash) with 1 N HCl and 10 mM sodium pyrophosphate. The filter disks were punched out into scintillation vials, 2.0 ml of Beckman Ready Flow III

scintillant was added, and the vials were counted for radioactivity for 1 minute.

For method 2, the assay was terminated with the addition of 175 µl/well of 50 mM EDTA at pH 8.0. Then 180 µl of the mixture was transferred to a pretreated Millipore DE 96 well filter plate. Vacuum was applied to the filter plate to aspirate away the liquid and immobilize the template primer on the DEAE filter disks. Each well was washed 3 times with 200 µl of 0.3 M ammonium formate and 10 mM sodium pyrophosphate at pH 8.0. 50 µl of microscint 20 scintillation cocktail was added to each well and the plate was counted for radioactivity on a Packard Topcount at 1 minute/well.

The IC_{50} values are calculated with the equation:

$$IC_{50} = [Inh]/(1/\text{fractional activity} - 1);$$

where the fractional activity = RT activity (dpms) in the presence of inhibitor/RT activity (dpms) in the absence of inhibitor. For a given inhibitor, the IC_{50} values were calculated for the inhibitor concentrations that range between 0.1-0.8 fractional activity. The IC_{50} values in this range (generally 2 values) were averaged. A compound was considered active if its IC_{50} was found to be less than 60µM. Compounds of the present invention have been found to have an IC_{50} less than 60µM.

Protein Binding and Mutant Resistance

In order to characterize NNRTI analogs for their clinical efficacy potential the effect of plasma proteins on antiviral potency and measurements of antiviral potency against wild type and mutant variants of HIV which carry amino acid changes in the known binding site for NNRTIs were examined. The rationale for this testing strategy is two fold:

1. Many drugs are extensively bound to plasma proteins. Although the binding affinity for most drugs for the major components of human plasma, namely, human serum albumin (HSA) or alpha-1-acid glycoprotein (AAG), is low, these major components are present in high concentration in the blood.

Only free or unbound drug is available to cross the infected cell membrane for interaction with the target site (i.e., HIV-1 reverse transcriptase, HIV-1 RT). Therefore, the effect of added HSA+AAG on the antiviral potency in tissue culture more closely reflects the potency of a given compound in the clinical setting. The concentration of compound required for 90% inhibition of virus replication as measured in a sensitive viral RNA-based detection method is designated the IC90. The fold increase in apparent IC90 for test compounds in the presence or added levels of HSA and AAG that reflect *in vivo* concentrations (45 mg/ml HSA, 1 mg/ml AAG) was then calculated. The lower the fold increase, the more compound will be available to interact with the target site.

2. The combination of the high rate of virus replication in the infected individual and the poor fidelity of the viral RT results in the production of a quasi-species or mixtures of HIV species in the infected individual. These species will include a majority wild type species, but also mutant variants of HIV and the proportion of a given mutant will reflect its relative fitness and replication rate. Because mutant variants including mutants with changes in the amino acid sequence of the viral RT likely pre-exist in the infected individual's quasi-species, the overall potency observed in the clinical setting will reflect the ability of a drug to inhibit not only wild type HIV-1, but mutant variants as well. We thus have constructed, in a known genetic background, mutant variants of HIV-1 which carry amino acid substitutions at positions thought to be involved in NNRTI binding, and measured the ability of test compounds to inhibit replication of these mutant viruses. The concentration of compound required for 90% inhibition of virus replication as measured in a sensitive viral RNA-based detection method is designated the IC90. It is desirable to have a compound which has high activity against a variety of mutants.

Dosage and Formulation

The antiviral compounds of this invention can be administered as treatment for viral infections by any means that produces contact of the active agent with the agent's site of action, i.e., the viral reverse transcriptase, in the body of a mammal. They can be administered by any conventional means available for use in conjunction with pharmaceuticals, either as individual therapeutic agents or in a combination of therapeutic agents. They can be administered alone, but preferably are administered with a pharmaceutical carrier selected on the basis of the chosen route of administration and standard pharmaceutical practice.

The dosage administered will, of course, vary depending upon known factors, such as the pharmacodynamic characteristics of the particular agent and its mode and route of administration; the age, health and weight of the recipient; the nature and extent of the symptoms; the kind of concurrent treatment; the frequency of treatment; and the effect desired. A daily dosage of active ingredient can be expected to be about 0.001 to about 1000 milligrams per kilogram of body weight, with the preferred dose being about 0.1 to about 30 mg/kg.

Dosage forms of compositions suitable for administration contain from about 1 mg to about 100 mg of active ingredient per unit. In these pharmaceutical compositions the active ingredient will ordinarily be present in an amount of about 0.5-95% by weight based on the total weight of the composition. The active ingredient can be administered orally in solid dosage forms, such as capsules, tablets and powders, or in liquid dosage forms, such as elixirs, syrups and suspensions. It can also be administered parenterally, in sterile liquid dosage forms.

Gelatin capsules contain the active ingredient and powdered carriers, such as lactose, starch, cellulose derivatives, magnesium stearate, stearic acid, and the like. Similar diluents can be used to make compressed tablets. Both tablets and capsules can be manufactured as sustained release products to provide for continuous release of

medication over a period of hours. Compressed tablets can be sugar coated or film coated to mask any unpleasant taste and protect the tablet from the atmosphere, or enteric coated for selective disintegration in the gastrointestinal tract. Liquid dosage forms for oral administration can contain coloring and flavoring to increase patient acceptance.

In general, water, a suitable oil, saline, aqueous dextrose (glucose), and related sugar solutions and glycols such as propylene glycol or polyethylene glycols are suitable carriers for parenteral solutions. Solutions for parenteral administration preferably contain a water soluble salt of the active ingredient, suitable stabilizing agents, and if necessary, buffer substances. Antioxidizing agents such as sodium bisulfite, sodium sulfite, or ascorbic acid, either alone or combined, are suitable stabilizing agents. Also used are citric acid and its salts, and sodium EDTA. In addition, parenteral solutions can contain preservatives, such as benzalkonium chloride, methyl- or propyl-paraben and chlorobutanol. Suitable pharmaceutical carriers are described in *Remington's Pharmaceutical Sciences, supra*, a standard reference text in this field.

Useful pharmaceutical dosage-forms for administration of the compounds of this invention can be illustrated as follows:

Capsules

A large number of unit capsules can be prepared by filling standard two-piece hard gelatin capsules each with 100 mg of powdered active ingredient, 150 mg of lactose, 50 mg of cellulose, and 6 mg magnesium stearic.

Soft Gelatin Capsules

A mixture of active ingredient in a digestible oil such as soybean oil, cottonseed oil or olive oil can be prepared and injected by means of a positive displacement pump into gelatin to form soft gelatin capsules containing 100 mg of the active ingredient. The capsules should then be washed and dried.

Tablets

A large number of tablets can be prepared by conventional procedures so that the dosage unit is 100 mg of active ingredient, 0.2 mg of colloidal silicon dioxide, 5 milligrams of magnesium stearate, 275 mg of microcrystalline cellulose, 11 mg of starch and 98.8 mg of lactose. Appropriate coatings may be applied to increase palatability or delay absorption.

Suspension

An aqueous suspension can be prepared for oral administration so that each 5 mL contain 25 mg of finely divided active ingredient, 200 mg of sodium carboxymethyl cellulose, 5 mg of sodium benzoate, 1.0 g of sorbitol solution, U.S.P., and 0.025 mg of vanillin.

Injectable

A parenteral composition suitable for administration by injection can be prepared by stirring 1.5% by weight of active ingredient in 10% by volume propylene glycol and water. The solution is sterilized by commonly used techniques.

Combination of components (a) and (b)

Each therapeutic agent component of this invention can independently be in any dosage form, such as those described above, and can also be administered in various ways, as described above. In the following description component (b) is to be understood to represent one or more agents as described previously. Thus, if components (a) and (b) are to be treated the same or independently, each agent of component (b) may also be treated the same or independently.

Components (a) and (b) of the present invention may be formulated together, in a single dosage unit (that is, combined together in one capsule, tablet, powder, or liquid, etc.) as a combination product. When component (a) and (b) are not formulated together in a single dosage unit, the

component (a) may be administered at the same time as component (b) or in any order; for example component (a) of this invention may be administered first, followed by administration of component (b), or they may be administered in the revserse order. If component (b) contains more that one agent, e.g., one RT inhibitor and one protease inhibitor, these agents may be administered together or in any order. When not administered at the same time, preferably the administration of component (a) and (b) occurs less than about one hour apart. Preferably, the route of administration of component (a) and (b) is oral. The terms oral agent, oral inhibitor, oral compound, or the like, as used herein, denote compounds which may be orally administered. Although it is preferable that component (a) and component (b) both be administered by the same route (that is, for example, both orally) or dosage form, if desired, they may each be administered by different routes (that is, for example, one component of the combination product may be administered orally, and another component may be administered intravenously) or dosage forms.

As is appreciated by a medical practitioner skilled in the art, the dosage of the combination therapy of the invention may vary depending upon various factors such as the pharmacodynamic characteristics of the particular agent and its mode and route of administration, the age, health and weight of the recipient, the nature and extent of the symptoms, the kind of concurrent treatment, the frequency of treatment, and the effect desired, as described above.

The proper dosage of components (a) and (b) of the present invention will be readily ascertainable by a medical practitioner skilled in the art, based upon the present disclosure. By way of general guidance, typically a daily dosage may be about 100 milligrams to about 1.5 grams of each component. If component (b) represents more than one compound, then typically a daily dosage may be about 100 milligrams to about 1.5 grams of each agent of component (b). By way of general guidance, when the compounds of component (a) and component (b) are administered in combination, the

dosage amount of each component may be reduced by about 70-80% relative to the usual dosage of the component when it is administered alone as a single agent for the treatment of HIV infection, in view of the synergistic effect of the combination.

The combination products of this invention may be formulated such that, although the active ingredients are combined in a single dosage unit, the physical contact between the active ingredients is minimized. In order to minimize contact, for example, where the product is orally administered, one active ingredient may be enteric coated. By enteric coating one of the active ingredients, it is possible not only to minimize the contact between the combined active ingredients, but also, it is possible to control the release of one of these components in the gastrointestinal tract such that one of these components is not released in the stomach but rather is released in the intestines. Another embodiment of this invention where oral administration is desired provides for a combination product wherein one of the active ingredients is coated with a sustained-release material which effects a sustained-release throughout the gastrointestinal tract and also serves to minimize physical contact between the combined active ingredients. Furthermore, the sustained-released component can be additionally enteric coated such that the release of this component occurs only in the intestine. Still another approach would involve the formulation of a combination product in which the one component is coated with a sustained and/or enteric release polymer, and the other component is also coated with a polymer such as a lowviscosity grade of hydroxypropyl methylcellulose or other appropriate materials as known in the art, in order to further separate the active components. The polymer coating serves to form an additional barrier to interaction with the other component. In each formulation wherein contact is prevented between components (a) and (b) via a coating or some other material, contact may also be prevented between the individual agents of component (b).

Dosage forms of the combination products of the present invention wherein one active ingredient is enteric coated can be in the form of tablets such that the enteric coated component and the other active ingredient are blended together and then compressed into a tablet or such that the enteric coated component is compressed into one tablet layer and the other active ingredient is compressed into an additional layer. Optionally, in order to further separate the two layers, one or more placebo layers may be present such that the placebo layer is between the layers of active ingredients. In addition, dosage forms of the present invention can be in the form of capsules wherein one active ingredient is compressed into a tablet or in the form of a plurality of microtablets, particles, granules or non-perils, which are then enteric coated. These enteric coated microtablets, particles, granules or non-perils are then placed into a capsule or compressed into a capsule along with a granulation of the other active ingredient.

These as well as other ways of minimizing contact between the components of combination products of the present invention, whether administered in a single dosage form or administered in separate forms but at the same time or concurrently by the same manner, will be readily apparent to those skilled in the art, based on the present disclosure.

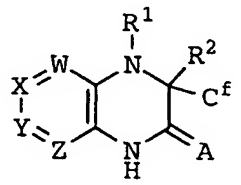
Pharmaceutical kits useful for the treatment of HIV infection, which comprise a therapeutically effective amount of a pharmaceutical composition comprising a compound of component (a) and one or more compounds of component (b), in one or more sterile containers, are also within the ambit of the present invention. Sterilization of the container may be carried out using conventional sterilization methodology well known to those skilled in the art. Component (a) and component (b) may be in the same sterile container or in separate sterile containers. The sterile containers of materials may comprise separate containers, or one or more multi-part containers, as desired. Component (a) and component (b), may be separate, or physically combined into a single dosage form or unit as described above. Such kits may

further include, if desired, one or more of various conventional pharmaceutical kit components, such as for example, one or more pharmaceutically acceptable carriers, additional vials for mixing the components, etc., as will be readily apparent to those skilled in the art. Instructions, either as inserts or as labels, indicating quantities of the components to be administered, guidelines for administration, and/or guidelines for mixing the components, may also be included in the kit.

Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

WHAT IS CLAIMED AS NEW AND DESIRED TO BE SECURED BY LETTER PATENT OF UNITED STATES IS:

1. A compound of Formula (I):



(I)

or a stereoisomer or pharmaceutically acceptable salt form thereof, wherein:

A is O or S;

W is N or CR^3;

X is N or CR^4;

Y is N or CR^5;

Z is N or CR^6;

C^f is cyclopropyl or C_{1-3} alkyl substituted with 3-7 halogen;

provided that the number of W, X, Y, and Z which are N, is zero, one or two;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$, $-SOR^{12}$, $-CONHR^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-6}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:

$-CH=CR^7R^8$,
$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-4}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, -OH, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^4 is selected from:
H, F, Cl, Br, I, -OH, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

alternatively, R^3 and R^4, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form a 5-7 membered carbocyclic ring, said carbocyclic ring being aromatic or nonaromatic, said carbocyclic ring being substituted with 0-2 R^{10};

alternatively, R^3 and R^4, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form a 5-7 membered heterocyclic ring containing 1, 2 or 3 heteroatoms atoms selected from the group consisting of N, O, and S, said heterocyclic ring being aromatic or nonaromatic, said heterocyclic ring being substituted with 0-2 R^{10};

R^5 is selected from H, F, Cl, Br, I, -OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, and butoxy;

alternatively, R^4 and R^5, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form a 5-7 membered carbocyclic ring, said carbocyclic ring being aromatic or nonaromatic, said carbocyclic ring being substituted with 0-2 R^{10};

alternatively, R^4 and R^5, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form a 5-7 membered heterocyclic ring containing 1, 2 or 3 heteroatoms atoms selected from the group consisting of N, O, and S, said heterocyclic ring being aromatic or nonaromatic, said heterocyclic ring being substituted with 0-2 R^{10};

R^6 is selected from:

H, OH, F, Cl, Br, I, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,

C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^{7a}, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;;

R^{7b}, at each occurrence, is methyl, ethyl, propyl, or butyl;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, CH(-OCH_2CH_2O-),
C_{1-4} haloalkyl,
C_{1-6} alkyl substituted with 0-3 R^{11},
C_{2-6} alkenyl,
C_{3-7} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, NR^7R^{7a}, and $C(=O)CH_3$;

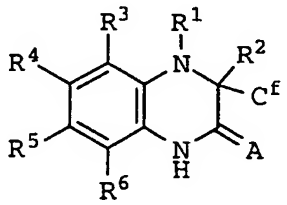
R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, NR^7R^{7a}, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-7} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10},
$-(CH_2)_p$phenyl substituted with 0-2 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl); and

p, at each occurrence, is selected from 0, 1, 2, and 3;

provided, if, simultaneously, each of W, X, Y, and Z are carbon, then R^2 is not unsubstituted C_{1-4} alkyl.

2. A compound according to Claim 1 of Formula (II):



(II)

wherein:

A is O or S;

C^f is $-CF_3$, $-CF_2CF_3$, or $-CF_2CF_2CF_3$;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$, $-SOR^{12}$, $-CONHR^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-6}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and

$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
$-CH=CR^7R^8$,
$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, -OH, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^4 is selected from:
H, F, Cl, Br, I, -OH, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,
phenyl substituted with 0-2 R^{10}, and

5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

alternatively, R^3 and R^4, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form $-O-CH_2-O-$, $-O-CH_2-CH_2-O-$, or $-CH=CH-CH=CH-$;

R^5 is selected from H, F, Cl, Br, I, -OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, and butoxy;

alternatively, R^4 and R^5, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form $-O-CH_2-O-$, $-O-CH_2-CH_2-O-$, or $-CH=CH-CH=CH-$;

R^6 is selected from:

H, OH, F, Cl, Br, I, OCF_3, -CN, NO_2, CHO, $C(=O)CH_3$, $C(=O)CF_3$, $C(=O)NH_2$, $C(=O)NHCH_3$, NR^7R^{7a}, $NR^7C(=O)OR^{7b}$, $C(=O)OR^7$, SR^7, $S(=O)R^7$, SO_2R^7, SO_2NHR^7, $NR^7SO_2R^{7b}$,

C_{1-3} alkyl substituted with 0-3 R^{11},

C_{2-3} alkenyl,

C_{2-3} alkynyl,

C_{1-3} alkoxy,

phenyl substituted with 0-2 R^{10}, and

5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^{7a}, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;;

R^{7b}, at each occurrence, is methyl, ethyl, propyl, or butyl;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, CH(-OCH_2CH_2O-),
C_{1-4} haloalkyl,
C_{1-6} alkyl substituted with 0-3 R^{11},
C_{2-6} alkenyl,
C_{3-7} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, NR^7R^{7a}, and $C(=O)CH_3$;

R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, NR^7R^{7a}, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-7} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10},
-$(CH_2)_p$phenyl substituted with 0-2 R^{10}, and
-$(CH_2)_p$(C_{3-5} cycloalkyl); and

p, at each occurrence, is selected from 0, 1, 2, and 3.

3. A compound according to Claim 2, wherein:

A is O or S;

C^f is $-CF_3$, $-CF_2CF_3$, or $-CF_2CF_2CF_3$;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$, $-SOR^{12}$, $-CONHR^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-5}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
$-CH=CR^7R^8$,
$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, $-OH$, $-OCF_3$, $-CN$, $-NO_2$, $-CHO$, $-C(=O)CH_3$,
$-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$,
$-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-SCH_3$,
$-S(=O)CH_3$, $-SO_2CH_3$, $-SO_2NHCH_3$, $-NHSO_2CH_3$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,

R^4 is selected from:
H, F, Cl, Br, I, $-OH$, OH, $-OCF_3$, $-CN$, $-NO_2$, $-CHO$,
$-C(=O)CH_3$, $-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$,
$-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$,
$-NHC(=O)OCH_3$, $-NHC(=O)OCH_2CH_3$, $-C(=O)OCH_3$,

$-C(=O)OCH_2CH_3$, $-SCH_3$, $-SCH_2CH_3$, $-S(=O)CH_3$,
$-S(=O)CH_2CH_3$, $-SO_2H$, $-SO_2CH_3$, $-SO_2CH_2CH_3$, $-SO_2NHCH_3$,
$-SO_2NHCH_2CH_3$, $-NHSO_2CH_3$, $-NHSO_2CH_2CH_3$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,

alternatively, R^3 and R^4, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form $-O-CH_2-O-$, $-O-CH_2-CH_2-O-$, or $-CH=CH-CH=CH-$;

R^5 is selected from H, F, Cl, Br, I, -OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, and butoxy;

alternatively, R^4 and R^5, when substituents on adjacent carbon atoms, are taken together with the carbon atoms to which they are attached to form $-O-CH_2-O-$, $-O-CH_2-CH_2-O-$, or $-CH=CH-CH=CH-$;

R^6 is selected from:
H, F, Cl, Br, I, -OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$,
$-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$,
$-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-SCH_3$,
$-S(=O)CH_3$, $-SO_2CH_3$, $-SO_2NHCH_3$, $-NHSO_2CH_3$,
C_{1-3} alkyl substituted with 0-3 R^{11},
C_{2-3} alkenyl,
C_{2-3} alkynyl,
C_{1-3} alkoxy,

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^{7a}, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;;

R^8, at each occurrence, is selected from:

H, F, Cl, Br, I, CH(-OCH_2CH_2O-),
C_{1-4} haloalkyl,
C_{1-6} alkyl substituted with 0-3 R^{11},
C_{2-6} alkenyl,
C_{3-7} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10};

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, NR^7R^{7a}, and $C(=O)CH_3$;

R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, NR^7R^{7a}, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-7} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{10},
$-(CH_2)_p$phenyl substituted with 0-2 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl); and

p, at each occurrence, is selected from 0, 1, 2, and 3.

4. A compound according to Claim 3, wherein:

A is O;

C^f is $-CF_3$ or $-CF_2CF_3$;

R^1 is selected from:
$-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-C_{1-5}$ alkyl substituted with 0-3 R^{11},
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
$-CH=CR^7R^8$,
$-C\equiv C-R^8$,
$-CH=CHCHR^7R^8$,
$-(CHR^7)_pCHR^7R^8$,
$-(CHR^7)_pCH=CR^7R^8$,
$-(CHR^7)_pC\equiv C-R^8$,
$-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, $-OH$, $-OCF_3$, $-CN$, $-NO_2$, $-CHO$, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$,

R^4 is selected from:
H, F, Cl, Br, I, $-OH$, OH, $-OCF_3$, $-CN$, $-NO_2$, $-CHO$, $-C(=O)CH_3$, $-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^5 is selected from H, F, Cl, Br, I, $-OH$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^6 is selected from:

H, F, Cl, Br, I, -OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, $CH(-OCH_2CH_2O-)$,
C_{1-4} haloalkyl,
C_{1-4} alkyl substituted with 0-3 R^{11},
C_{2-4} alkenyl,
C_{3-6} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl;

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, $-NH_2$, $-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$, and $C(=O)CH_3$;

R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, $-NH_2$, $-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,
C_{2-4} alkynyl,
C_{3-6} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and

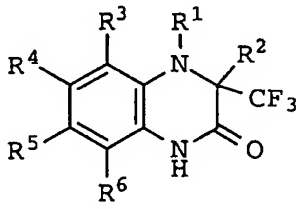
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl,

$-(CH_2)_p$phenyl substituted with 0-2 R^{10}, and

$-(CH_2)_p(C_{3-5}$ cycloalkyl); and

p, at each occurrence, is selected from 0, 1, and 2.

5. A compound according to Claim 4 of Formula (III)



(III)

wherein:

R^1 is selected from:

$-CF_3$, $-CF_2H$, $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-CH_2CH_2CH_2CH_3$, $-CH(CH_3)_2$, $-CH_2CH(CH_3)_2$, $-CH_2CH_2C(CH_3)_3$, $-CH_2CH_2CH(CH_3)CH_3$,

$-CH(=CH_2)CH_3$, $-CH_2CH=CH_2$, $-CH_2-CH=C(CH_3)_2$, $-CH_2-C\equiv CH$, $-CH_2-C\equiv CCH_3$, $-CH_2Ph$, -cycPr, $-CH_2$cycPr, $-CH_2CH_2$cycPr,

$-CO_2CH_3$, $-CO_2CH_2CH_3$, $-CO_2CH_2CH_2CH_3$, $-CO_2CH_2CH_2CH_2CH_3$, $-CO_2CH(CH_3)_2$, $-CO_2CH_2CH(CH_3)_2$, $-CO_2CH_2Ph$, $-CO_2$cycPr, $-CO_2CH_2$cycPr, $-CO_2CH_2CH=CH_2$, $-SO_2CH_2CH_3$, $-SO_2CH(CH_3)_2$, $-COCH_3$, $-COCH_2CH_3$, $-COCH_2CH_2CH_3$, $-COCH(CH_3)_2$, and $-COCH_2$cycPr;

R^2 is selected from:

benzyl, phenethyl, $-CH_2CH_2$cycPr, $-C\equiv C-CH_3$, $-C\equiv C-CF_3$, $-C\equiv C$-Et, $-C\equiv C$-iPr, $-C\equiv C$-cycPr,

-C≡C-1-(CH_3)cycPr, -C≡C-CH=CH_2, -C≡C-C(=CH_2)CH_3, -CH=CH-CH_3, -CH=CH-CF_3, -CH=CH-Et, -CH=CH-iPr, -CH=CH-cycPr, -CH=CH-CH=CH_2, -CH_2-C≡C-CH_3, -CH_2-C≡C-CF_3, -CH_2-C≡C-Et, -CH_2-C≡C-iPr, -CH_2-C≡C-cycPr, -CH_2-C≡C-CH=CH_2, -CH_2-CH=CH_2, -CH_2-CH=CH-CH_3, -CH_2-CH=CH-CF_3, -CH_2-CH=CH-Et, -CH_2-CH=CH-iPr, -CH_2-CH=CH-cycPr, -CH_2-CH=CH-CH=CH_2, -CH_2-CH=C(CH_3)$_2$, and -CH=CH-CH_2-cycPr;

R^3 is selected from:

H, F, Cl, Br, I, -OH, -OCF_3, -CN, -NO_2, -C(=O)CH_3, -C(=O)CF_3, -NH_2, -$NHCH_3$, -N(CH_3)$_2$, -CF_3, -CH_3, -CH_2CH_3, -OCH_3, and -OCH_2CH_3,

R^4 is selected from:

H, F, Cl, Br, I, -OH, OH, -OCF_3, -CN, -NO_2, -C(=O)CH_3, -C(=O)CF_3, -C(=O)NH_2, -C(=O)$NHCH_3$, -NH_2, -$NHCH_3$, -N(CH_3)$_2$, -NHC(=O)OCH_3, -C(=O)OCH_3, -CF_3, -CH_3, -CH_2CH_3, -OCH_3, and -OCH_2CH_3;

R^5 is selected from H, F, and Cl; and

R^6 is selected from:

H, F, Cl -OH, -OCF_3, -CF_3, -CH_3, and -OCH_3.

6. A compound according to Claim 2, wherein the compound is selected from:

4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(methyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(methyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

3-(allyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(benzyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(cyclopropylmethyl)-3-(allyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(propargyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(cyclopropylethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isopropyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(allyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(cyclopropylmethyl)-3-(n-butyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(isobutyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(cyclopropylmethyl)-3-(phenethyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(allyl)-3-(phenethyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(methoxy)-4-(cyclopropylmethyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(methoxy)-4-(allyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(cyclopropylmethyl)-3-(1-propynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(allyl)-3-(1-propynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isobutoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(n-butoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(allyloxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(benzyloxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(n-propylsulfonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(phenylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(neopentyl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(2-propynyl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isopropylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(cyclopropylcarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(ethylsulfonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(isopropylsulfonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

4-(methoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(chloro)-4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

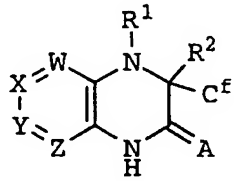
6-(chloro)-4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(ethoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one;

6-(fluoro)-4-(isopropoxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one; and

6-(fluoro)-4-(propen-2-yl-oxycarbonyl)-3-(2-cyclopropylethynyl)-3-(trifluoromethyl)-3,4-dihydro-quinoxalin-2(1H)-one.

7. A compound according to Claim 1 of Formula (IIb),



(IIb)

wherein:

A is O or S;

W is N or CR^3;

X is N or CR^4;

Y is N or CR^5;

Z is N or CR^6;

C^f is $-CF_3$, $-CF_2CF_3$, or $-CF_2CF_2CF_3$;

provided that one or two of W, X, Y, and Z are N;

R^1 is selected from:
- $-CO_2R^{12}$, $-COR^{12}$, $-SO_2R^{12}$,
- $-(CHR^7)_pCHR^7R^8$,
- $-(CHR^7)_pCH=CR^7R^8$,
- $-(CHR^7)_pC\equiv C-R^8$,
- $-C_{1-5}$ alkyl substituted with 0-3 R^{11},
- $-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
- $-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^2 is selected from:
- $-CH=CR^7R^8$,
- $-C\equiv C-R^8$,
- $-CH=CHCHR^7R^8$,
- $-(CHR^7)_pCHR^7R^8$,
- $-(CHR^7)_pCH=CR^7R^8$,
- $-(CHR^7)_pC\equiv C-R^8$,
- $-(CH_2)_p$phenyl substituted with 0-3 R^{10}, and
- $-(CH_2)_p(C_{3-5}$ cycloalkyl);

R^3 is selected from:
H, F, Cl, Br, I, -OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$,

R^4 is selected from:
H, F, Cl, Br, I, -OH, OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-C(=O)NH_2$, $-C(=O)NHCH_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-NHC(=O)OCH_3$, $-C(=O)OCH_3$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^5 is selected from H, F, Cl, Br, I, -OH, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^6 is selected from:
H, F, Cl, Br, I, -OH, $-OCF_3$, -CN, $-NO_2$, -CHO, $-C(=O)CH_3$, $-C(=O)CF_3$, $-NH_2$, $-NHCH_3$, $-N(CH_3)_2$, $-CF_3$, $-CH_3$, $-CH_2CH_3$, $-OCH_3$, and $-OCH_2CH_3$;

R^7, at each occurrence, is selected from H, methyl, ethyl, propyl, and butyl;

R^8, at each occurrence, is selected from:
H, F, Cl, Br, I, $CH(-OCH_2CH_2O-)$,
C_{1-4} haloalkyl,
C_{1-4} alkyl substituted with 0-3 R^{11},
C_{2-4} alkenyl,
C_{3-6} cycloalkyl substituted with 0-2 R^9,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting of pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl;

R^9, at each occurrence, is selected from D, OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, and F;

R^{10}, at each occurrence, is selected from OH, methyl, ethyl, propyl, butyl, methoxy, ethoxy, propoxy, butoxy, F, Cl, Br, I, CN, $-NH_2$, $-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$, and $C(=O)CH_3$;

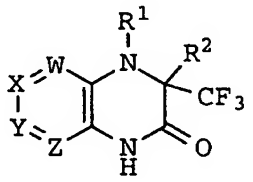
R^{11}, at each occurrence, is selected from OR^7, CN, F, Cl, Br, I, NO_2, $-NH_2$, $-NHCH_3$, $-NHCH_2CH_3$, $-N(CH_3)_2$, $-N(CH_2CH_3)_2$, CHO, $C(=O)CH_3$, $C(=O)NH_2$;

R^{12}, at each occurrence, is selected from
C_{1-6} alkyl,
C_{2-4} alkenyl,

C_{2-4} alkynyl,
C_{3-6} cycloalkyl,
phenyl substituted with 0-2 R^{10}, and
5-6 membered aromatic heterocycle system containing from 1-3 heteroatoms selected from the group consisting pyridinyl, furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, and oxazolidinyl,
$-(CH_2)_p$phenyl substituted with 0-2 R^{10}, and
$-(CH_2)_p(C_{3-5}$ cycloalkyl); and

p, at each occurrence, is selected from 0, 1, and 2.

8. A compound according to Claim 7 of Formula (IIIb)



(IIIb)

wherein:

R^1 is selected from:
$-CF_3$, $-CF_2H$, $-CH_3$, $-CH_2CH_3$, $-CH_2CH_2CH_3$, $-CH_2CH_2CH_2CH_3$, $-CH(CH_3)_2$, $-CH_2CH(CH_3)_2$, $-CH_2CH_2C(CH_3)_3$, $-CH_2CH_2CH(CH_3)CH_3$,

$-CH(=CH_2)CH_3$, $-CH_2CH=CH_2$, $-CH_2-CH=C(CH_3)_2$, $-CH_2-C\equiv CH$, $-CH_2-C\equiv CCH_3$, $-CH_2Ph$, -cycPr, $-CH_2$cycPr, $-CH_2CH_2$cycPr,

$-CO_2CH_3$, $-CO_2CH_2CH_3$, $-CO_2CH_2CH_2CH_3$, $-CO_2CH_2CH_2CH_2CH_3$, $-CO_2CH(CH_3)_2$, $-CO_2CH_2CH(CH_3)_2$, $-CO_2CH_2Ph$, $-CO_2$cycPr, $-CO_2CH_2$cycPr, $-CO_2CH_2CH=CH_2$, $-SO_2CH_2CH_3$, $-SO_2CH(CH_3)_2$, $-COCH_3$, $-COCH_2CH_3$, $-COCH_2CH_2CH_3$, $-COCH(CH_3)_2$, and $-COCH_2$cycPr;

R^2 is selected from:
benzyl, phenethyl, $-CH_2CH_2$cycPr,

-C≡C-CH_3, -C≡C-CF_3, -C≡C-Et, -C≡C-iPr, -C≡C-cycPr, -C≡C-1-(CH_3)cycPr, -C≡C-CH=CH_2, -C≡C-C(=CH_2)CH_3, -CH=CH-CH_3, -CH=CH-CF_3, -CH=CH-Et, -CH=CH-iPr, -CH=CH-cycPr, -CH=CH-CH=CH_2, -CH_2-C≡C-CH_3, -CH_2-C≡C-CF_3, -CH_2-C≡C-Et, -CH_2-C≡C-iPr, -CH_2-C≡C-cycPr, -CH_2-C≡C-CH=CH_2, -CH_2-CH=CH_2, -CH_2-CH=CH-CH_3, -CH_2-CH=CH-CF_3, -CH_2-CH=CH-Et, -CH_2-CH=CH-iPr, -CH_2-CH=CH-cycPr, -CH_2-CH=CH-CH=CH_2, -CH_2-CH=C(CH_3)$_2$, and -CH=CH-CH_2-cycPr;

R^3 is selected from:

H, F, Cl, Br, I, -OH, -OCF_3, -CN, -NO_2, -C(=O)CH_3, -C(=O)CF_3, -NH_2, -$NHCH_3$, -N(CH_3)$_2$, -CF_3, -CH_3, -CH_2CH_3, -OCH_3, and -OCH_2CH_3,

R^4 is selected from:

H, F, Cl, Br, I, -OH, OH, -OCF_3, -CN, -NO_2, -C(=O)CH_3, -C(=O)CF_3, -C(=O)NH_2, -C(=O)$NHCH_3$, -NH_2, -$NHCH_3$, -N(CH_3)$_2$, -NHC(=O)OCH_3, -C(=O)OCH_3, -CF_3, -CH_3, -CH_2CH_3, -OCH_3, and -OCH_2CH_3;

R^5 is selected from H, F, and Cl; and

R^6 is selected from:

H, F, Cl -OH, -OCF_3, -CF_3, -CH_3, and -OCH_3.

9. A pharmaceutical composition, comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound according to one of Claims 1-8.

10. A method for treating HIV infection, comprising: administering to a host in need of such treatment a therapeutically effective amount of a compound according to one of Claims 1-8, or a pharmaceutically acceptable salt form thereof.

11. A method of treating HIV infection which comprises administering, in combination, to a host in need thereof a therapeutically effective amount of:

(a) a compound according to one of Claims 1-8; and,

(b) at least one compound selected from the group consisting of HIV reverse transcriptase inhibitors and HIV protease inhibitors.

12. A method according to Claim 11, wherein, the reverse transcriptase inhibitor is a nucleoside reverse transcriptase inhibitor.

13. A method according to Claim 11, wherein, the HIV reverse transcriptase inhibitor is selected from AZT, 3TC, rescriptor, ddI, ddC, efavirenz, and d4T and the protease inhibitor is selected from saquinavir, ritonavir, indinavir, VX-478, nelfinavir, KNI-272, CGP-61755, and U-103017.

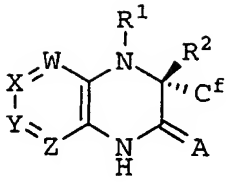
14. A method according to Claim 13, wherein the HIV reverse transcriptase inhibitor is selected from AZT, rescriptor, efavirenz, and 3TC and the protease inhibitor is selected from saquinavir, ritonavir, indinavir, and nelfinavir.

15. A method according to Claim 14, wherein, the HIV reverse transcriptase inhibitor is AZT.

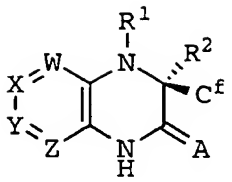
16. A method according to Claim 14, wherein, the HIV reverse transcriptase inhibitor is efavirenz.

17. A method according to Claim 14, wherein, the protease inhibitor is indinavir.

18. A compound according to Claim 1 of Formula (Ia) or (Ib):



(Ia)



(Ib)

or a stereoisomer or pharmaceutically acceptable salt form thereof.

INTERNATIONAL SEARCH REPORT

Interr ɔnal Application No
PCT/US 99/14395

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C07D241/44 C07D401/06 C07D405/06 A61K31/495

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C07D A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 657 166 A (HOECHST) 14 June 1995 (1995-06-14) cited in the application claims ---	1,8,9
A	US 3 250 774 A (PAUL SCHMIDT ET AL.) 10 May 1966 (1966-05-10) column 1 -column 6; claims 1,10 ---	1,9
A	CHEMICAL ABSTRACTS, vol. 109, no. 25, 1988 Columbus, Ohio, US; abstract no. 231061f, page 868; XP002119479 abstract & JP 62 207264 A (ASAHI GLASS) 11 September 1987 (1987-09-11) --- -/--	1,9

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 October 1999	05/11/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Francois, J

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/US 99/14395

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	NOBUYA KATAGIRI: "SYNTHESIS OF 4-TRIFLUOROMETHYLAZETIDIN-2-ONES" CHEMICAL AND PHARMACEUTICAL BULLETIN., vol. 34, no. 10, 1986, pages 4429-4431, XP002119478 PHARMACEUTICAL SOCIETY OF JAPAN. TOKYO., JP ISSN: 0009-2363 page 4429 -page 4430; example 3 -----	1

1

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

I. ıational application No.
PCT/US 99/ 14395

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.: 10 to 17
because they relate to subject matter not required to be searched by this Authority, namely:
Remark: Although claims 10 to 17 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

2. [ ] Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

.ormation on patent family members

Interr ·nal Application No
PCT/US 99/14395

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 657166 A	14-06-1995	DE 4342024 A	14-06-1995
		AU 697486 B	08-10-1998
		AU 8042194 A	15-06-1995
		CA 2137605 A	10-06-1995
		CN 1108935 A	27-09-1995
		HU 70037 A	28-09-1995
		JP 7196511 A	01-08-1995
		NZ 270088 A	27-04-1998
		ZA 9409785 A	12-07-1995
US 3250774 A	10-05-1966	NONE	
JP 62207264 A	11-09-1987	NONE	